PT 7
The other terminal for IBM and ICL mainframes
FERRANTI

COMPUTER WEEKLY

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Who cares about computers?

THE general public is overwhelmingly indifferent to computers and their effect on everyday life. Or, at least, the French public is. For in a survey by the French monthly magazine Ordinateurs, well over half those interviewed were "don't knows" when questioned whether computers were useful, useless or dangerous in areas like education, medicine and privacy.

The first two questions were aimed at finding out how familiar people were with computers, and the answer was "not very." Only 7 per cent said they had seen a computer working, 54 per cent said they had not, 17 per cent thought they had, and 22 per cent did not know. More had seen a terminal, but here again it was only 14 per cent.

Ordinateurs wondered if many of the "horror stories" told about computers were merely due to the fact that few people knew what one looked like.

The next two questions covered the use people made of computers at work. Only three per cent said they had anything to do with computers every day, and seven per cent said they were involved frequently. A massive 81 per cent said "never" or "don't know."

More than half were again "don't knows" when asked if computers were useful to their job. About 16 per cent thought computers were useful and 14 per cent useless. The survey found that younger people tended to think the computer was useful, while the older ones tended to think of the computer as a threat to their jobs.

The two per cent who thought computers were dangerous were mainly women.

A high percentage, 74 per cent, answered "never" and "don't know" on the question of whether their private lives were affected by computers. But 13 per cent said they were affected, giving computer printed bills as examples. And only seven per cent thought computers useful in their private lives while 23 per cent thought them useless. The majority, again, were indifferent.

The last four questions concerned the effect of computers on different areas of life. Computers were seen as useful to humanity by 23 per cent, and useless by 10 per cent; seven per cent thought them useful in health, six per cent useless and seven per cent dangerous; and nine per cent thought them useful to education, 18 per cent useless and 11 per cent dangerous.

Ordinateurs summed up the survey saying, "We must humbly conclude that the public is little concerned about computers. This is normal, but at the same time worrying: normal because the computer is only a tool, worrying because public ignorance could allow the growth of dangerous ambiguities such as those already surrounding nuclear energy."

NEWS IN BRIEF

DoE reply on US minis

ONE of the two MPs who wrote to the Department of Employment about its purchase of US-built minicomputers and printers from Interdata rather than Digico for disseminating job vacancy details in London and Glasgow (CW, August 11) has received a reply from the DoE.

In its letter to John Wakeham, Tory MP for Maldon, Essex, the DoE pointed out that Interdata's parent company, Perkin Elmer, has manufacturing establishments in the UK which employ about 700 people building laboratory equipment.

French Bill

THE draft Bill on data protection prepared by the French Cabinet last year (CW, July 22, 1976) is now being scrutinised by the French law commission. The Bill will be presented to Parliament early next month.

TSB finalists

FINALISTS for the major contract to replace the 2,000 or so terminals used by the Altrincham Group of Trustee Savings Banks are resident supplier Olivetti, together with Burroughs, Datasaab and Philips. Univac is to supply an 1100/82 mainframe to replace the ICL System 4 mainframe at the centre of the network (CW, April 7).

Japan sells to Iraq

JAPANESE sources say that Toshiba has sold a mid-range Acos 77/800 mainframe to Iraq. The Acos 77 line is based on Honeywell Level 66 licences, and the 600 is comparable in power to a 66/40 or 66/60. The sale suggests that Toshiba is prepared to compete with Honeywell in the Third World countries.

OECD call to control data use

THE emphasis of legislation protecting personal data should be on the use of the data rather than the actual processing. This view was put by UK speakers at an international conference on trans-border data flow, organised by the Organisation for Economic Co-operation and Development in Vienna last week.

"The collection and storage of personal data, of itself, harms no one: only when it is used should we become concerned," said David Firnberg, director of the National Computing Centre. "Therefore it is at users that legislation should be directed."

Alan Benjamin, director-general of the Computing Services Association, said control of the use of data gave protection against unauthorised new uses, provided protection regardless of where the work was done and, above all, was enforceable.

Benjamin called for the setting up in each country of a statutory body which would issue licences to end users for specific uses of data.

Benjamin added that the authority should also grant certificates of security to organisations running computers. But, he went on, "Laws which attempt detailed regulation in a fast developing environment will be subject to technological loopholes."

One reason for having a licensing authority was that the general public would find such a body reassuring, said Benjamin.

Firnberg said that it was vital for countries to reach international agreement on data protection legislation.

"But legislation for controlling disclosure of data varies enormously from one country to another. This will become a major obstacle to data flow and communications unless we can harmonise national programmes and agreement on international standards."

Harmonisation is certainly needed to support one of Benjamin's suggestions: "Before issuing a licence to a user, the data protection authority shall be required to satisfy itself that the processing will be carried out to an acceptable level of security. In this task the authority may accept the assurance of quality from the data protection authority in the country where the processing is carried out."

Now that the computer industry has aired its views, the Council of Europe is meeting this week to consider a draft international treaty which could lead to certain minimum protection standards around the world.

Northants Bureau team wins CW five-a-side cup

WE are the champions ... This team from Northamptonshire Computer Bureau won the Computer Weekly Cup in a five-a-side football knock-out competition for teams of data processing staff from installations in Northamptonshire.

In the first round, played on a league basis, Northamptonshire Computer Bureau beat British Timken 2-0 and drew with Crane 1-1. Crane drew with British Timken. Northamptonshire Computer Bureau beat Anglia Building Society 2-1 in the quarter final and Avon Cosmetics 2-0 in the semi-final.

The final was a 7-1 rout of Hamlyns.

The cup was presented by Billy Best, player of the year at Northampton Town. The team was (back row) Dave Farrer, John Archer and Paul Geagan, and (front row) Phil Mackay and John Davies.

The competition, which attracted 23 teams, was organised by an Avon programmer, Alan Rence. Our thanks to him.

Ironman's double blow for UK

CONTRACTS for the development of prototype compilers for the US Department of Defence's planned standard real time language have been awarded with a double disappointment for the UK.

Three of the four contracts have been awarded to purely US-based developers, with one in the direction of Europe, and the UK's last candidate for a base language, Algol 68, has been effectively excluded.

Following publication of the "Ironman" specification, listing ideal features for a real time language to be used for all projects in the US armed services, the DoD selected three candidate languages, Algol 68, PL/I and Pascal, to serve as a base for the planned language, and requested detailed proposals (CW, March 24).

Unexpectedly, all proposals selected for implementation are based on Pascal. The successful candidates are CII-Honeywell Bull, the Stanford Research Institute of California, Softech and Intermetrics, software houses with a long standing record of work for government departments.

Pascal is a highly structured Algol-related language developed by Niklaus Wirth in Zurich on the basis of work in collaboration with the UK's Professor Tony Hoare.

REDEMPTORIST PUBLICATIONS of Chewton in Hampshire, Catholic publishers and booksellers, are pleased to report the installation of a B.C.L. Molecular 18 Mk 111 computer that has been delivered exactly on time and in accordance with contract.

The Management Board of Redemptorist Publications, who have been previously using a V.R.C., wish to express their sincere and grateful thanks to BUSINESS COMPUTER (SYSTEMS) LTD., of Portslade in Sussex for the way and manner in which the equipment has been installed and commissioned; their experience and professionalism has resulted in a total problem free start. Our thanks also go to B.C.L. for the time and energy that has been spent in determining our software needs and upon the work completed on the system design and programme specification—in our experience this has been superb!

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CII-HB to build Level 6

IN what is seen in part as a defensive move against possible nationalisation of CII-Honeywell Bull in France, Honeywell is planning to extend the power of the Level 6 minicomputer line to match most of the French-built Level 64 series. The company plans a Level 6/50 series, which like the 6/30 and 6/40 will have substantial software compatibility with the US and Scottish-built Level 66 mainframe line.

Meanwhile CII-Honeywell Bull has announced that it is to manufacture the three models in the 6/30 and 6/40 lines at its Belfort factory. CII-HB has a substantial multi-year contract for minis with the leading French manufacturer SEMS, but the decision to build the US-designed minis in France will make life harder not only for SEMS but also for the other French minimakers, Intertechnique and SFENA.

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Briefing

Joint CDC-Soviet project

THE Soviet Union has agreed to accept an offer from Control Data for the joint development of an advanced scientific computer. The agreement was made following a conference at the Academy of Sciences in Leningrad, which is the centre of the project.

According to Soviet computer expert Professor Mikhail Ignatiev, this system is to be built on "new technological principles" that could greatly outperform existing systems. He calls it a "recursion computer."

The proposal is likely to be closely scrutinised by the US government, which recently vetoed a bid by CDC to sell a Cyber 76 to Russia.

● More on CDC in Russia — page 40.

One-day strike

A ONE-DAY token stoppage by ASTMS members at Laporte Industries, Redhill, last week followed the non-payment of an agreed 5% Phase 2 increase. A company spokesman said that the payment was delayed because of staff illnesses in the DP department, but added that accrued back-pay would be fully paid at the end of this month.

2950 pre-sell

FORMAL announcement of the 2950 is expected by the end of November. It is understood that ICL is already pre-selling the system in international markets, including South Africa.

£1m go-ahead

THE recent multi-machine order for GEC 4080s from University College, London, has been followed with two more significant GEC sales, including one to the south western universities which have just received the go-ahead for a £1 million interactive system to replace existing ICL System 4 machines. More details — Page 3.

Peripherals launch

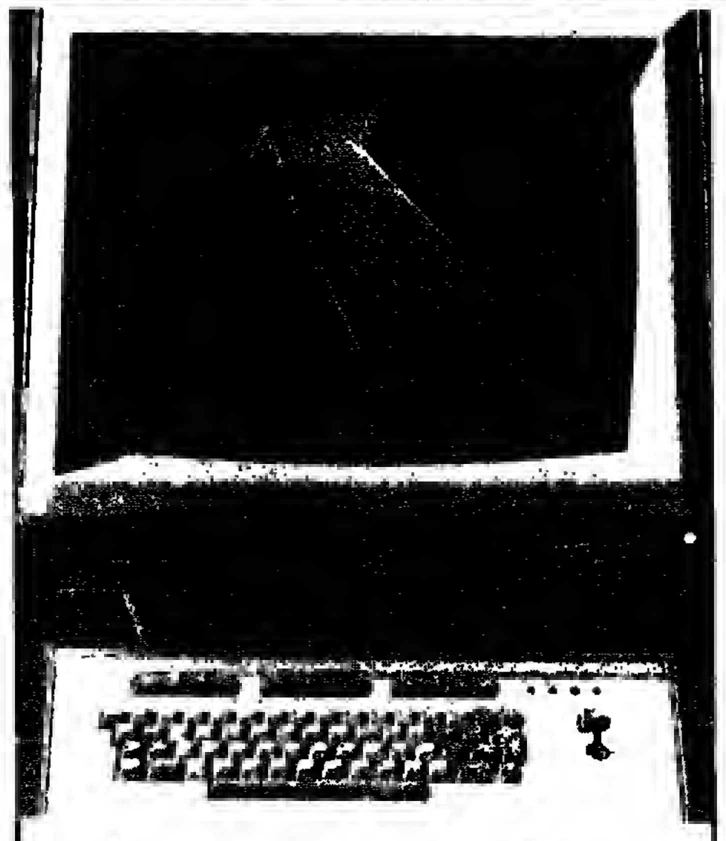
A COMPLETE range of peripherals for IBM Series 1 minicomputers is to be introduced by Control Data within the next two months. The range will include matrix and line printers, a video terminal, disc drives and add-on memory.

Othello v HP

THE new British Othello champion, Joseph Woch, takes on a Hewlett-Packard computer at the game this weekend. Peter Tooley, who teaches programming in the mechanical engineering department at ... University, has written a program in Basic for a Hewlett-Packard 9830 and for a 2000. He says the computer always beats the beginner.

Retail centre

A RETAIL systems centre has been opened by ICL in Arlesey, Bedfordshire, to cater for the specialist retail and distribution industries. The centre will act as a demonstration, development and customer support location, and represents the company's ... attitude towards the ...-of-sale market.



Tektronix diversifies

MOVING for the first time beyond the provision of hardware, Tektronix has introduced a Finite Element Modelling package that can be run either online or offline from a host computer, and can format model data into a compatible form for all finite element analysis software available.

Developed to run resident on the company's 4081 interactive graphics terminal (CW February 3), the package has been designed specifically for applications in structural analysis in mechanical and civil engineering. Called FEM 101, it can operate in any one of four modes: as a dumb terminal operating directly online to a host computer, as an intelligent terminal, as a workstation operating offline except for number crunching, or entirely standalone, with no interaction with a host computer.

The package is constructed in three main sections. The first is a data loader, which allows the loading of an existing bulk data file from a host computer or other source for editing purposes. The second section is the model generator, which allows node and element generation and editing in three dimensions, and the third is a bulk data formatter, which allows model data to be formatted into a card image file that is compatible with the particular finite element analysis package to be run.

Without recourse to a host computer, the package allows the user to rotate through three axes, zoom in or out on assigned sections, produce cross-sections, and produce hard copy print-outs of the display. It is also possible to obtain a status report on the modelling process at any time.

● Our picture shows FEM in action on the Tektronix 4081 system. It is being applied to turbine blade design with three dimensional rotation.

ICL staff rush for shares

STAFF at ICL have firm faith in the company, judging by the number of applications for shares.

The company is offering 12,000 staff 2.5 million shares, or 17½% of the issued share capital, over five years (CW, August 18) and when the first million were offered there were applications from 3,875 staff for 1.8 million shares.

This rate of response is believed to be much higher than any other industrial company has experienced in similar schemes.

The shares were offered on August 25, when ICL shares were worth 201p. On Monday of this week the shares stood at 248p.

MPs call for benefit fiddles check

A CALL for greater use of computers to cross-check social security information has come from a watchdog body of MPs in an investigation of overpayments of £10.8 million social security benefits in 1975-76.

The Committee of Public Accounts, in its report on the overpayments, says the main safeguard against fraud and mistakes is a check of details given by benefit claimants.

"We stress the importance of taking all reasonable steps to ensure that there are no categories of cases where appreciable and avoidable overpayments are occurring. We therefore urge the departments to pursue their investigations to ensure that full advantage is taken of the facilities offered by computers to cross-check and supply information to the point at which a claim is decided."

RESULTS OF CW SURVEY...

Doubts on IBM sales boom

THE anticipated sales boom in medium/large-scale IBM-compatible mainframes and the new IBM 3033, 3032 and 3031 systems, could be smaller than expected in the UK — at least for a year or two. That is the broad conclusion of a Computer Weekly survey of a dozen large-scale IBM users, taken just before this week's expected public announcement of the 3032 and 3031X (CW, September 29) and news of the first UK order for the Itel Advanced System range of IBM processor replacements (see below).

The 3032 and 3031 are expected to be announced this week after Computer Weekly has gone to Press.

The 3030 series of machines appears to have arrived at the wrong moment in the development cycle of most of the installations contacted by Computer Weekly, and, at this stage, none would go on record as saying that they were planning to place an order, even just to get in the queue.

Lloyds Bank placed an order for four 370/168s about two years ago, and took delivery of the second two earlier this year. As a committed IBM user, the bank might have been expected to switch its 168s to 3033s, but has no plans to do so for some time.

"We are in the middle of a monumental transfer plan with the move into our new Bankside computer centre, and we won't be looking for any change of mainframes for at least two years," said a spokesman.

"When we do start looking,

● Turn to page 11

Unilever opts for Itel

FIRST UK order for an Itel Advanced System has been placed by Unilever Computer Services Ltd.

The bureau has selected an Itel AS/5-1 in preference to an IBM 370/158. The AS/5 is now being installed at UCSL's centre at Burgess Hill, Sussex, where it will be upgraded to an AS/5-3, equivalent to a 370/158-3, early in 1978.

The initial configuration will have a two Megabyte main memory and 18 200 Megabyte Itel disc drives. UCSL says that its decision to buy from Itel was based principally on cost/performance, and involved extensive comparative studies. UCSL said that it was interested in IBM's 3032 replacement for the 158 but was not prepared to wait for delivery.

UCSL already has three IBM 360/65 mainframes, one at Burgess Hill and the other two at its Watford centre. None of these will be replaced by the Itel system.

Computer salesmen are at the hard edge of the computer business and from this week they have their own special spot in Computer Weekly — on the inside back page. Turn to page 39 for the first Sales Bit by The Trader, a man with a wealth of selling experience.

Operators have had their regular CW Op Spot for many months now, and this week Bernard Allen takes over this regular feature. Meet Bernard on page 11.

Also: Chesslab P4

COMPUTER WEEKLY'S INSIDE NEWS

IN TOP GEAR
Racing driver Divina Galica (pictured right) and boxer Henry Cooper will be vying for attention with the latest systems and equipment for the automated office at the International Business Show in Birmingham next week. Computer Weekly peeks into the office of the future and provides a taste of the things to come. Pages 15/16

DATABASE PUT DOWN
Larger scale database software is never economically justified according to Gilb's mythodology. Page 6

WHITHER THE BCS?
Malcolm Peltu interviews new BCS President Professor Paul Samet, and Computerview asks Who would cry if the BCS should die? Pages 2 and 14

THE MICRO ERA
Lack of human skills could hold up microprocessor progress according to early work by the Electrical Research Association on an important new survey. Martin Banks rounds up the micro news. Page ...

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COMPUTERVIEW

Who would cry if the BCS should die?

THE British Computer Society is supposed to be the body representing computer professionals, but it has failed to establish unequivocally that there is such a thing as a computer profession.

And in recent years, beset by financial problems, the BCS seems to have lost its way.

Its commercial activities, like the Datafair conference which ends today (Thursday), could have been organised by any commercial, rather than professional, body and its "technical" activities lack the vigour of the late sixties and early seventies when Datafairs were more the British forum for technical and professional discussions, and activities like the Advance Programming Group conferences on Databases and Job Control Languages were milestones in their fields.

This week's Datafair has had an interesting theme — The End User — and an imaginative programme. But it has little that uniquely identifies it as an event to be associated with a professional body. Commercial conference organisers, like Infotech and Online, are constantly organising events of a similar style.

The emphasis on commercial survival for the BCS has also led to that fear among some BCS members that it should not become too associated with the term "academic."

But the BCS, as a professional body, is nothing if it is not academic; if it is not concerned primarily with theory and with techniques.

By their very nature, these techniques are, of course, concerned with the "end user," just as the medical profession is primarily concerned with curing patients.

In an interview with Computer Weekly (page 14), Professor Paul Samet quite rightly questions the validity of the terms "academic" and "commercial" when used in relation to BCS members.

The distinction, as he points out, is more between those involved in the development of computing techniques and those who apply the techniques. And Professor Samet is to be commended for recognising the contribution that each side can make to the other.

But surely it is time that the BCS once again unashamedly put the accent on "techniques" rather than the applications side. Organisations like the National Computing Centre and Data Processing Management Association have a more specific "user" role.

In the long run, if the BCS is to grow in influence and in membership it must define for itself a far more consistent and bolder approach.

It should also try to move away from an overdependence on "adapting" its public image annually to the character of the President.

The next few years for the BCS will be crucial.

They now have the money to buy a new headquarters and the immediate threat of financial disaster has been removed.

But if it is to prosper, the BCS membership must grow substantially. To do so it must clearly show that it has a unique and valuable role to play in DP.

In the branches and specialist groups, committees and working parties, the BCS has already achieved a great deal and made a major contribution to computing activity.

But if the BCS died tomorrow, would it in any way affect future computer developments?

Manufacturers would continue to manufacture, end users would continue to end use, programmers would continue to program.

Could one say that the quality of all those activities would diminish if there was no BCS? That there would be no strong impetus to improve techniques and standards without the BCS?

The answer to those questions should be that, without the BCS, the standing of the computing profession would drop.

At present, however, the BCS would be hard put to argue this case. Its future policies should aim at vigorously demonstrating the unique value of the BCS and attracting a large number of new members.

Ten years ago...

COMPUTER WEEKLY OCTOBER 5, 1967

LONDON University ordered a CDC 6600 with a 131K memory of 60-bit words. Rental was estimated at £600,000 a year . . . Lord Bowden, principal of Manchester Institute of Science and Technology, in a speech at Datafair 67 called for a national policy for computers . . . G. W. Barlow was appointed managing director of English Electric Computers . . . A low-cost bridge between an accounting machine and a computer was unveiled by NCR . . . Proposed takeover by GEC of AEI raised questions as to the future of the two companies' computer divisions . . . Honeywell introduced the H125 and H1250 in the Series 200 family . . . A special security code will be used by Scanning and Data Preparation Ltd in high speed transmission tests between its Londonderry and London offices.

INTERRUPT. . .

THERE was once a happy bug enthusiast who, by dint of intelligent application to his studies during his early years, had arranged his life so well that he spent many blissful summer hours romping over the fields around his university with a butterfly net and a cine camera.

He shot miles and miles of fascinating film . . . of ladybirds zooming low over beanfields, of thrips and gnats dancing in the hot summer evenings, etc.

During the winter months he analysed his films, studied the flight mechanisms and developed his theories and his models. He built a tank to model the action of certain insect wings in flight. An experimental "wing" was "flapped" according to data derived from his film analysers and controlled by means of a small minicomputer through digital/analogue convertors. The resulting motion of the liquid around the wing was studied and the information fed back via analogue/digital convertors. He had files labelled: GREENFLY, BLUEBOTTLE, DADDYLONGLEGS . . .

His films were good and so was his theory. BBC's Horizon became interested. They bought his films and visited his computer system for a special filming session . . . The lights were bright and warm in the old faculty basement. The computer LEDs became a high-speed blur, the model wing began to "flap." All eyes were agog. The cameras whirred. The technicians were hushed by the presence of genius.

Quite suddenly, there was a loud buzzing sound. A large bumble bee, awakened from winter slumber by the bright TV lights, began flying rapidly in tighter and tighter circles above the tank. Finally, it made a dive end in its death-throes churned up the fluid around the feedback probes.

The computer halted the experiment and sat quietly for a while, evidently "thinking." Finally it typed a brief message on the operator's teletype: "BUG SOMEWHERE," it said — and returned to command mode.

MORAL: Regarding bugs, whatever you does, be sure to remove the ones that buzz.

● Submitted by John Davidson, of Graphic Display Systems, Cambridge, who receives this week's £5 Interrupt prize.

STANDING back from the small business machine could be dangerous. The DPM could well trip over several assorted micros and minis in the process.

For once, the current crop of computer exhibitions have got the theme right. All concentrate on "Thinking Small" — a true reflection of the current DP marketplace. In fact this particular market is only small in its product. Otherwise it is impressively large and threatens to engulf all in its path. Most DPM's would agree that small business systems do not grow: they multiply.

In approved parallel mode, there are now numerous training and education sessions concentrating on getting the best out of the users' small business system, the best in this case being as much as possible plus an optimistic margin. Any day now, a protection society will have to be established to defend the small system from abuse. Perhaps known as ISM, Institute of Small Machines, the objectives will (in keeping) be limited in size: to protect the mini or micro system from abuse, misuse and general aggro.

Unlike their larger comrades, small business machines are expected to continue operating through thick or thin — or rather heat and cold, in conditions which most self-respecting mainframes would hesitate to tolerate and would quickly blink their way to a halt.

The Institute should aim to promote an attitude among users of care and attention for the small machine. It should emphasise that the occasional wipe-down with an anti-static rag does not constitute an acceptable maintenance routine. Accommodation also usually leaves much to be desired. It should be suitable for both operator and machine. Siting the small machine in an isolated alcove or behind the stationery cupboard, should not be encouraged; nor putting it in the centre of a draughty passage. Often the siting considerations are limited to the proximity of a suitable power plug.

Mainframes, in comparison, have a sheltered life. The slightest indication of an ailment brings a large dose of attentive serviceman. Preventive maintenance is logged and monitored even more closely then the operators' shift allowance. All this plus an environment which would be the envy of any medical laboratory.

The new Institute must give top priority to educating the user. Despite what the sales literature might suggest, small machines are not totally suited to processing long name/address runs on to sticky labels. Gumming-up the works will be the main achievement. Similarly, the small system should not attempt to operate in a databank mode. Processing an historic record print run will result in the machine featuring in the company's historic cost accounting debt.

As an urgent task, the institute should promote some standard rules. Suggestions include:

● Coffee supplies to be limited to the operator;

● The system should not be used as a chess-lab except at lunchtime;

● Untrained operators should not be allowed near the machine until they have passed an aptitude test.

Only then will the small business system have a fair chance of survival.

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LA-38 DECwriter II the 30 cps brand leader ► £1090
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Interactive Cobol on Inforex 7000

MULTI-USER interactive Cobol is one of the most important features of the Inforex 7000 terminal system which has now been introduced to the UK market after being launched in the US early this year (CW, January 27).

John Evans

John Evans, managing director of Inforex UK, stresses that the 7000 is not a small business system but was designed and evolved for distributed processing, and will be sold as such. Data entry, file management and data communications, as well as data processing, can be handled simultaneously by the 7000, although data entry will be the most important function at most sites.

A 7000 configuration comprises a master display terminal containing the CPU which is a 16-bit microprocessor, and up to seven local or remote slave terminals. These can be either displays or serial printers. A virtual memory feature handles dynamic memory management of non-resident systems and user software and provides each user with 200K bytes of storage on a demand-paging basis.

Inforex points out that the 7000 software is designed to support high-level multi-user interactive Cobol. This can be applied in real time so that data can be processed as it is being keyed by the terminal operator.

Other users' Cobol programs can be executed simultaneously.

ICL now has world rights for TPS

ONE of the most successful independent teleprocessing monitors for ICL machines, Telecomputing's TPS, has been taken up by ICL for marketing in the UK and Europe.

This puts users in these countries on a par with those outside Europe, to whom ICL has been supplying TPS for almost a year (CW, November 4, 1976).

The agreement with Telecomputing gives ICL non-exclusive world rights to supply TPS for use on ICL's 2903 and 2904 machines, and on the larger 2900s running under DME. Telecomputing will continue to sell TPS for these machines alongside ICL, and will retain sole rights to the product on 1900 machines.

Telecomputing has gained its first client with a 2960 DME system, Dobson Park Industries, of Wigan. The software house is already committed to catering for native mode 2900 with a product called TPS Care, which preserves the user, terminal and application program interface characteristics of TPS, while using standard 2900 TP software.

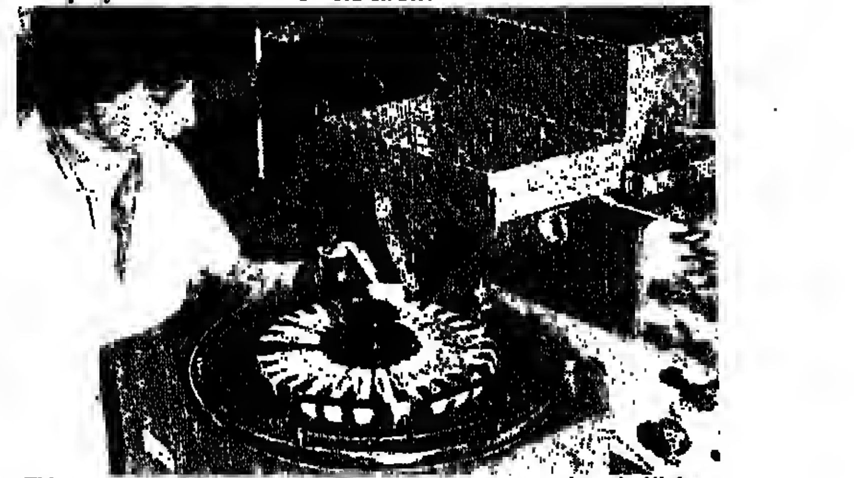
The 2903/4 sector of the TPS market is becoming increasingly important, and now accounts for about half of the product's 60-plus users. ICL appears far more interested in obtaining a share of the TPS market on its newer machines than on the 1900 series.

But, as Telecomputing's director Bernard Panton told Computer Weekly, "We want to be left with exclusive rights in some sector of the market."

Apart from its own sales of the main TPS software, and royalty income from ICL sales, Telecomputing expects considerable opportunity for follow-up sales of the TPS Advanced Terminal and Directory Access features of TPS, to which it has also retained rights.

ICL, by marketing TPS for the DME environment, could be setting itself a problem with its 2900 users. On transferring to VME/B or K, these could see a move to TPS Care as preferable to entirely ICL software, unless ICL produces a suitably straightforward conversion aid.

£1m allocation to SW universities



This system consisting of a Perkin Elmer gas chromatograph and a Vickers bar code reader, is speeding the analysis of motorists' blood samples submitted for alcohol tests at the Metropolitan Police forensic science laboratory. The bar code reader reads information about the sample while it is being analysed, and the two sets of information are sent to a minicomputer. This produces a report which is used in court.

UNIVERSITY computing in the south-west has been given a boost with the allocation of over £1 million to Bath and Bristol universities for interactive facilities to replace their old ICL System 4 computers.

A GEC 4070 is also to be installed as an interface processor in the south-west universities' network.

Both and Bristol are working out the best way of spending the money. Dr Alec Nichol, at Bath, said the universities' would probably install separate machines, although a single computer at one site had not been ruled out. A number of manufacturers had been invited to tender.

Dr Nichol said that although the batch processing needs of the region were well met by the ICL 2980, installed at Bath as a central facility for the universities in the area, there was a shortage of interactive facilities, especially for teaching. The Bath and Bristol computers initially would also serve Cardiff and Exeter, which also have System 4s, and if that arrangement was successful it could become long term. If the load was too great, however, Exeter and Cardiff would probably get their own replacement machines.

The Bath and Bristol computers are expected to be installed by 1979.

The network now includes a 128K byte GEC 4070, installed at Bath and acting both as an interface between the existing network and new mainframes added to it and as a system for native mode 2900 with a product ... converting from System 4 protocols to internationally standard protocols like X25 and HDLC.

● Another university order for a 4070 has come from Manchester. The machine will act as a front end communications processor to the regional computing centre's combined Control Data 7600 and ICL 1900 configuration and will also serve as a gateway to the Post Office's experimental packet switched service for the 30 universities which access the Manchester facilities.

Altergo buys Consort

YET another of the consultancy activities of Altergo has been given its own specialist division, this time as the result of a takeover. Consort IMIS, a company specialising in financial applications software, is now to be known as Altergo Financial Management Systems.

Consort was founded in 1971 and its main areas of activity have been in planning and budgeting consultancy. An outcome of this is Budget 6, a package designed to help the accountant or financial director with budget and cash-flow calculations.

Budget 6 will form part of Altergo Financial Management Systems' package repertoire, and will be complemented by Spiral, an appropriately titled package for inflation accounting on fixed assets. Spiral was developed by Altergo's Business Systems division.

Both packages are designed for IBM equipment. Budget 6 will be converted for IBM's System 3, System 32 and 34 and, most interestingly, Series 1. Altergo was one of the first UK firms to take an interest in this machine.

The new division will also take over much of the financially-oriented consultancy previously handled by other Altergo divisions. Some clients have already been gained.

The division will employ Consort's existing staff, and will be headed by its managing director, Hugh Wingfield-Hayes.

The happy managers

MANAGERS in the European electronics industry are happy with their lot, according to the Brussels-based job agency Korn/Ferry International.

Of 200 job applications received from six countries in the last quarter of 1979 and the first quarter of this year, only 5% came from electronics executives, while 32% came from executives in financial services and 18% from those in consumer product firms. The percentage was slightly higher, at 7%, when it came to marketing and sales executives.

Korn/Ferry found that the best salaries were enjoyed between the ages of 40 and 45, although this was also the period of greatest unrest.

UK role in PL/I standard

PREPARATIONS are under way for the expected large UK role in devising an ISO standard for PL/I (CW, June 10, 1978). A meeting is to be held in London on October 24, to brief the British Standards Institution delegation to the International Standards Organisation's first meeting on the topic, in The Hague during November.

After some delays, a joint ANSI/European Computer Manufacturers' Association standard was approved earlier this year. The ISO standard will be based on this, but could possibly involve considerable alteration.

One point on which UK concern has already been expressed is the definition of subsets of this large and multi-disciplinary language.

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DOWNTIME by Chad

MY Russian is non-existent, but I'm told the warning on the above printout, produced for Malcolm Peltu by an M-4030 when he visited the International Engineering Exhibition in Brno, Czechoslovakia, reads, "Watch Out!"

It is, I'm relieved to say, the only example of computer graphics using the Cyrillic alphabet to come my way since I asked for examples on August 28.

My thanks to all those readers who responded — my office could be papered with the samples sent, although not (for lack of space) this column.

I was interested to learn that Bristol University's computer centre has a library of over 100 such pictures, and aims to build a comprehensive collection. Steve Fisher, senior operator at the centre, writes that his group would be pleased to be in touch with anyone who can supply source programs for further pictures (the university's mainframe is an ICL System 4/75, which is networked with other universities' System 4s and the 2980 at Bath), and would pass such information to others. The group is also compiling a library of computer games, and would welcome additions. Steve's address is: University of Bristol Computer Centre, University Walk, Bristol.

Program automation: End this neglect

Taking time out from his normal Privateview column, Professor DONALD MICHIE takes up the recent Computer Weekly call for action to create national policies on the development and impact of information technology. Here he argues for the establishment of vigorous national R&D effort.

IN response to Computer Weekly's Call for Action I strongly endorse the proposal for a task force to retrieve something from the mess.

Clarion calls always carry a risk that the good citizens may rush out of doors and, each mounted on his own mettlesome hobby-horse, gallop off in every direction except where the trouble is.

The location of the present disaster area is too obvious for that, namely in the Land of Myopis commonly referred to as Whitehall. Shirley Williams' recent feat of producing a 54-page Green Paper on Education with no mention of the word "computer" is one small straw in an ill wind.

The UK has the traditions, the skills, the brains, and the know-how to recapture world leads in computing and software. These knowledge-intensive sectors of our culture and economy are precisely suited for concentrated treatment by a country which is small and poor, yet still enterprising in outlook.

Thus far, I am sure, we are all agreed. The question is: are these potential assets frequently/sometimes/never sent to hell in a basket by the caprice and obtuseness of bureaucrats?

A. M. Cox of Ferranti was right to call attention (CW, August 25) to the fact that UK firms are still to be found in the front wave of new developments. It should also be noted that excellent things have recently been done by individual government agencies, such as NRDC and the National Enterprise Board's consortium, Insac.

But it is wrong to conclude that the "conceived in the UK, made elsewhere" pattern is not a real problem. My experience over years of professional activity in the potentially applicable field of machine intelligence is that it is precisely at certain sensitive transition points along the line from conception to production that official obscurantism wreaks the deadly havoc.

I received a painful reminder the other day at breakfast when my eye fell on a full-page colour advertisement from General Motors headed:

A COMPUTER THAT CAN SEE GETS ITS FIRST REAL JOB

Four years ago I had responsibility for a fine team of gifted young computer scientists who had just achieved goals in robotics widely judged impossible in relation to constraints of time and resources.

General Motors, hearing of this, borrowed the film record which we made of the Edinburgh versatile assembly system. At about the same time our government sponsor suddenly terminated all support, and the team had to be disbanded.

It is clear from the colour ad that General Motors over the intervening four years have faithfully followed our trail, transforming into cost-effective implementation an academic exploration of machine "teachability" as a programming short-cut. Unfortunately General Motors is not a British firm.

The said government sponsors even managed to mis-identify the FREDDY project as an exercise in manufacturing technology instead of in computer science. It may therefore be of interest to spell out the place of such work, as I see it, in the technical scheme of things.

Machine Intelligence is directly and inescapably involved in the automation of programming skills. It is of course only one of the critical areas from which progress in the automation of programming may be expected.

In the past, disciplines such as compiler design and program semantics have justly claimed the lion's share. But the user of the future will not be satisfied to specify his solution in Cobol or Fortran and have only the machine-coding automated.

He will demand to be lazy and specify his problem only, plus hints at a solution — approach, with a few examples and a body of general facts about the problem-domain. Then he will expect Super-compiler to generate him a good solution in, say, Fortran.

As Super-compilers move to the centre of things, mainstream machine intelligence techniques will have an increasing role to play in their design. I am currently working on AL1, a Super-compiler for chess. In end-game trials a two-month programming task was done in two days and a task widely thought to be "unprogrammable" was done in six weeks.

As with manufacturing/computing confusion instanced earlier, we again encounter one of the more persistent delusions which buzz inside the bonnets of government administrators of scientific research.

These persons need to discover whether as the taxpayer's agents they should love, hate, or merely giggle at this or that experimental programming study. Procedure follows the rule: (1) ascertain the program's test-domain; (2) adopt attitude accordingly.

To caricature the rule, if it is a picture-processing program the test picture may be of members of the Royal Family (love), or of notorious dictators (hate), or of the characters in Winnie the Pooh (giggles). If the program drives a robot, then it is industrial automation (love, but possibly someone else's — try Department of Industry), and if it plays chess it is a frivolous evasion (giggles).

The logical end is that nothing at all gets classified as computer science, unless the subject domain is so inconspicuous as to escape detection, thus letting computation theory in under the wire.

The scientist, on the other hand, knows that the experimental task chosen is orthogonal to the principles to be elucidated. A robot might learn recognition rules from sample TV views of engineering parts, and a chess program might learn strategies from sample positions. If the two use the same fundamental mechanism, then they constitute one and the same contribution to the automation of programming.

Imagine that early R&D in support of telecommunications had been monitored by assessors according to the content of conversations tapped from the telephone wires: "We can't support this. I distinctly heard some very rude words." "Well . . . but very beautifully spoken I thought . . ." and so on.

Mercifully telecommunications research was judged in the US important enough to merit the sane and protected environment of properly regulated research institutes, and Bell Laboratories among others was born.

Now in the new wave of computing technology, major institutes for advanced computing have been established in the US and some existing institutes, such as Bell Labs themselves, have become pre-eminent also in the new disciplines.

In the UK what is the score? The score for the entire country is precisely zero. For a few years SRC's Atlas Computer Laboratory seemed to tremble on the brink of developing in this much needed direction. But readers of Professor David Barron's recent obituary of that laboratory (IUCC Newsletter vol 5, no [illegible]) will know that opposition to a freestanding national research effort in computing is dangerously entrenched.

There seem to be enough British software and systems houses to come together in [illegible] to form a joint overseas marketing spearhead. There are enough experienced research men scattered around the UK able and willing to form an R&D spearhead which could carry out ahead of all comers excepting the Americans and Japanese. In the critical area of software automation and associated skills.

Since the total cost of programming to the nation approaching the amazing figure of £1,000 million a year, the [illegible] is worth at least a look.

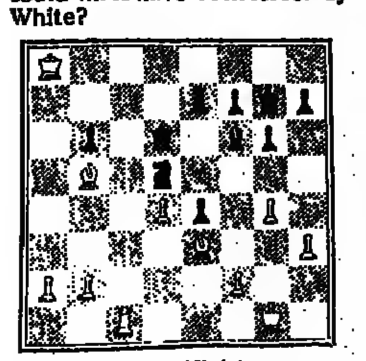
When we add the possibility that one day certain kinds of programming might of necessity be contracted out by other nations to the UK industry, [illegible] the only software people able to handle the given levels of task-complexity, than I submit that a national institute for advanced computation is worth more than a look.

It should be seriously discussed by any task force which Computer Weekly's initiative may bring into existence.

CHESSLAB by DONALD MICHIE

Machine strategies

LAST Chesslab (CW, September 22) ended with Russia's program Kaissa poised on the brink. If she had responded to Duchess' queen check by 34. ... K-N2, creating the position below, could mate have been forced by White?



The neat sacrificial sequence which Kaissa spotted (and side-stepped in the actual play by the last-ditch move: 34. ... R-K1) goes: 35. Q-B8 ch! K x Q; 36. B-KR6 ch. K-N1 (or B-N2); 37. R-B8 ch. Q-Q1; 38. R x Q ch. R-K1; 39. R x R mate.

Five moves make 10 ply. Kaissa running on the IBM 370/168, as at Toronto, searches to depths ranging from 7 up to 12 ply in quiet variations, more in forcing sequences. So it is not in [illegible] way surprising for her to [illegible] this one, and the same almost certainly goes for Duchess.

But since none of the chess-masters who were present spotted it, the "blunder" K-N2 might have offered best chances against a human expert!

The machine-versus-human contrast was heightened by a happening outside the official programme. International Master Hans Berliner was matched against a database containing an error-free end-game strategy for king and rook against king and queen. Its author, Ken Thompson of Bell Labs, was one of the two programmers of Belle, which ended the championship in fourth place.

Thompson has computed an exhaustive solution to the KQKR end-game and stored it on disc in the form of a look-up table of optimal continuations for all legal positions.

The complete space comprises approximately 2 million White-to-move positions and an equal number of Black-to-move positions.

Berliner was invited to play the queen's side against the database in consultation with International Master Lawrence Day.

The KQKR ending is tricky, but it is known to be a forced win for the queen's side from general position. The assumption is that a strong master should be able to handle it. Yet Berliner found to his surprise that he could not win against the machine.

The machine conducted its defence in a style quite new to him, with manoeuvres which were counter-intuitive from the point of view of a human defender yet efficacious for maximally delaying defeat.

These manoeuvres frequently ran counter to the precepts of the chess books, which advise the rook's side, for example, not to allow separation of the rook from the king — a rule of thumb against White's bringing off a sequence of checks to build a skewer attack on the rook.

Hence the machine's play had the masters floundering in "unnatural" territory in which they repeatedly wandered from the winning line.

The discrepancy between the defensive strategy implemented in Thompson's database and the strategy recommended in the books is easy to explain.

The database strategy has been generated under no other constraint than that it be objectively optimal, ie that it maximise the length of the forcing path leading to defeat.

The book strategy, on the other hand, has been prepared under the constraint of an added requirement, namely that it be feasible for a human to memorise, and also not require excessive calculation for its application in across-the-board play.

Could there be a machine methodology for generating strategies for *humans*? Later Chesslabs will return to this intriguing topic.

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SEL updates operating system

A MAJOR update of Systems Engineering Laboratories' operating system for its SEL 32 minicomputer series has been announced in the UK. The system now includes a time sharing capability, and is accompanied by a Basic compiler and a database management system.

The time sharing capability, said UK managing director John Wright, would make the SEL 32 more attractive to the commercial market. Previously, the company had concentrated on scientific and technical users, though the system already has a Cobol compiler.

The Maxximum database management system handles hierarchically organised databases, and has an added capability for managing partially inverted files. This allows the user to access records by the value of certain key fields.

The database software also supports a pointer item, allowing data to be referenced by absolute core memory location. This simplifies, in particular, the storage of data from real time monitoring and sampling hardware.

GEC system to produce Braille texts

A GEC 4070 is to be used to help produce Braille texts from English originals. The system, to be installed by the Royal National Institute for the Blind at its new London printing works next year (CW, May 12), will drive a Braille line printer if a single copy of a document is wanted, or produce tape cassettes for controlling the embossing machines which produce metal plates used on printing presses for mass production.

English text will be input by 16 display terminals and edited online, so the system will be a considerable improvement on the present card based system which takes up to a year to produce a novel in Braille.

Racal show attracts over 6,000 visitors

THE annual Racalex exhibition of products from the whole Racal group attracted 3,500 visitors to the Royal Lancaster Hotel, London, last week, and proved the most successful yet, with 700 foreign visitors from 98 different countries attending.

In addition, 2,500 of the company's 6,000 UK employees visited the show.

Two products which attracted most attention were the Racal-Milgo System 180 Network Management System, and the Racal-Tacticom CAFF, computer-aided fault finding system.

CAFF comes in two versions in the Rebate Line of diagnostic equipment — the RTL-5, based on a disc-backed Computer Automation mini, and the microprocessor-based portable RTL-5M, which comes with a small VDU-keyboard module only 6.5 inches by 5.5 inches by 11.3 inches.

The systems are designed to guide operators through test and diagnostic procedures of anything from vehicle electronics to radios and television sets, giving simple question and answer routines for diagnosis.

Autumn lectures

A SERIES of public lectures on machine intelligence is to be presented by members of Edinburgh University's Machine Intelligence Research Unit this autumn. The unit is headed by Professor Donald Michie, a regular contributor to Computer Weekly, who will himself be presenting five of the eight lectures.

The lectures will start at 5.15 pm in the Faculty Room North, Hume Tower, George Square, Edinburgh. They are free, and no advance tickets are needed.

The dates and topics are as follows:

OCTOBER 17: Perspectives of knowledge engineering — a review of systems being developed around the world for condensing and re-writing long established scientific lore and useful arts.

OCTOBER 24: The Stanford Mycin system for clinical pathology.

OCTOBER 31: The Stanford Dendral system for organic chemistry.

NOVEMBER 7: A fact retrieval system for the Edinburgh Western General Hospital.

NOVEMBER 14: The state of play in computer chess.

NOVEMBER 21: Machine-aided synthesis of rules of thumb.

NOVEMBER 28: Proving chess strategies correct.

DECEMBER 5: Social aspects of machine intelligence.

Merrick elected CSA president

Peter Merrick

PETER MERRICK, managing director of the bureau Lowndes-Ajax, was voted president of the Computing Services Association last week.

In his acceptance speech, Merrick said the growth of minicomputer and microprocessor systems meant that there was an even greater need for the professional expertise of service companies.

He also believed it essential that the CSA continued to recruit new members so that more funds would be available to increase the effectiveness of its activities.

Merrick's vice-president is John Ockenden, of Scicon. The secretary is Basil Cousins, of Computel, and the treasurer Dr Douglas Eyeions, of BOC's bureau subsidiary Datasolve.

Barney Gibbens, of Computer Analysts and Programmers, has replaced Merrick as the CSA's representative at the European Computing Services Association.

Super-Zappers—the latest in computer crime

"COMPUTERS have provided crooks with a new way of stealing as opposed to the previous manual methods, and the timescale in some cases is milliseconds," according to Donn Parker, a senior consultant for Stanford Research Institute International.

"There is also a danger of organised crime and foreign powers moving into the computer crime field," he added.

This new world has been created by the introduction of computing into our personal and business lives, and it is a world inhabited by Super-Zappers, Trojan Horses and Salami techniques*.

To many the jargon means nothing — just an "in" way to describe an event — but, says Parker, "I guess when a field has its own buzz-words, it has arrived."

Last week he chaired a two-day conference on Information security, organised by Online at the Regent Centre Hotel, London.

He has lectured to FBI agents on the problems encountered by investigators in computer crime, and has been in the "computer abuse" field for about two decades.

An infamous example of computer-related crime is that of the Equity Funding Insurance fraud, in which 54,000 fake insurance policies were produced and maintained by skilful manipulation of a computer. This resulted in an estimated $2 billion fraud which was dramatised on television as "The Billion Dollar Bubble".

"One specific area important in terms of computer crime is EFTS, electronic funds transfer systems," said Parker. "The opportunity for criminal acts here is enormous because the spotlight of responsibility is falling on fewer people. These people, in positions of responsibility will have more power, and so must be vetted much more carefully."

Supporting this view was Susan Nycum, a computer lawyer, based in San Francisco with the Computer Lawyers Association, who has worked with Donn Parker on computer crime.

"We have only seen the tip of the iceberg," she said, "and as more and more jobs become automated, the danger increases. EFTS is a danger area."

Research by Parker on a selection of 362 computer crime cases has shown certain vulnerable areas. These include poor controls over manual I/O handling, failure of business ethics, poor control of computer programs, weak or absent physical access controls, and lack of operating system access controls and integrity.

"I can see no difference in the dangers between the US and UK," said Parker. "Programmers are one of the most dangerous types of people, and the problem is that, with the state-of-the-art in computing, we cannot have any real safeguard. It will be at least eight years before a commercially available computer that has adequate safeguards is available."

*Super-Zapping is the method of by-passing system safeguards and procedures, and is similar to previous manual methods called "Zapping". Trojan Horse is a secret code embedded in the original program. Salami techniques involve apparently harmless acts such as rounding down of amounts, but due to the typical volume of data can be very lucrative.

This sporting life

OUR story about the system used by the Football League to compile fixture lists (Downtime, September 1) has evoked a response from a reader who has been involved with the system.

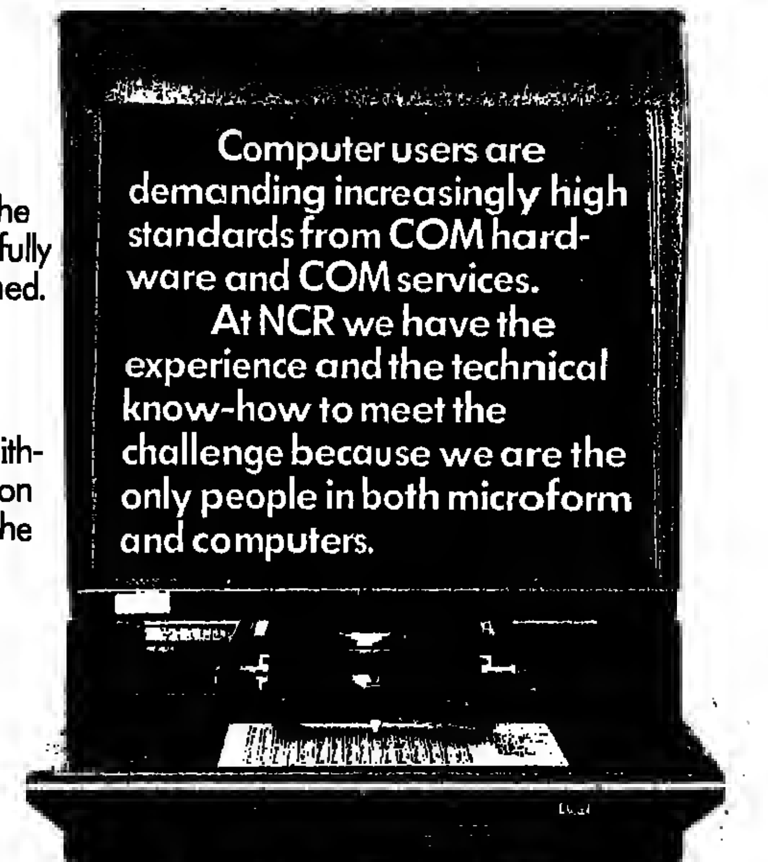
It appears that the system is also used by the Test and County Cricket Board. In fact the system can work out fixtures for any sport with up to four divisions and up to 40 teams in each division.

The system consists of a validation program, two sorts and a printing program. The validation program checks for inconsistencies, omissions and duplications, and has options for checking that each team plays every other team in its division once at home and once away, and for printing out lists of teams not playing on a given range of dates.

The printing program produces fixture lists by club or by date, according to the preceding sort.

The system takes five minutes to run on an MOP terminal linked to an ICL 1900 running under George 3, and 10 minutes to print the output.

How to reduce your COM problems.



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GILB'S MYTHODOLOGY

Does it save time, money or manpower?

RELATED to the issue of database languages (discussed in Gilb's Mythodology, September 8) is the software support packages which accompany them. Quite naturally a complex language specification results in a complex hunk of software.

I have been unable to find the resource saving justification for the use of these packages, even in special cases and isolated instances. My suspicion is that there is no economic justification. I have particularly concentrated my attention on IBM'S IMS product, which has something like 800 or more customers worldwide. I suspect that other database software packages of similar complexity, such as Codasyl-based packages with most or all features implemented would be as bad or even worse (as IBM maintained convincingly in one early report).

I also have reason to suspect that there are a number of "simple" database software packages such as Total (with as many users as IMS) which do not exhibit the same problems, mainly because they are simpler in concept and number of built-in functions.

I have been unable to provoke IBM into providing me with a single piece of documentation showing economic justification of the use of IMS. I have been unable to find any user willing to do so, and among the many documented cases of use of IMS in my collection, not one shows any impressive results or any attempt at economic justification.

The clearest and simpleat summary of this experience can be quoted from one of the case studies (Stapleton in Infotech Report, Database Systems, 1975) from the Bankers Trust experience. "There has been no dramatic impact on the bank as a result of using IMS", and " . . . database systems present it with new problems . . ", and "the only major effect of the installation of IMS that has been noticed by the bank is the increased cost of the computer service", and "a custom-built system would processmore efficiently, and might even have been chesper to develop."

Stapleton does not bisme IMS directly for the results, but does seem to draw the conclusion that the complexity of IMS distracted the development staffs' attention sway from the really importsnt problem of msking something useful for the bank's departments.

On a wider basis the Datspro user surveys, (reported in Datsmation, December 1976, page 110), show the IBM products with consistently lowest user-sstisfaction ratings of all database products (only IBM's GIS, which is even more complex than IMS, rated lower).

On a scale of 1 to 4 (1=poor, 2=fair, 3=good, 4=excellent) 29 IBM DL/I users averaged out all aspects with a 2.6 rating (not quite "good") and 33 IMS users (presumably using the DC *component as well)* rated it 2.9 on the sverage. By contrast 113 Total users gave a 3.5 rating and IDMS from Cullinane was rated 3.8 by 17 respondents. The IMS products got particularly low marks on esse of installation (2.3 and 2.2) for the information of those of you that have illusions about simplifying your development worries.

One IBM specialist in Sweden promised to send me proof of IMS economic justification. When it finally arrived, the proof consisted of the fact that a suite of about 43 programs before IMS use, became about 35 programs afterwards. Thot was all.

Another IBM specialist (experts, in my terminology are people who know their own limitations, so I use the term specialist when I find no evidence of expertise) tried to get me documentation on the level of specialist support required, snd produced the "success story" of the London local authority with ten IMS specialists: five for tuning the performance to avoid performance degradation or hardware upgrsde and five to fight the bugs. British Leyland reported six specialists at the start, and 10 in 1975. Swissair reported s total of 25 at May, 1975, guide. I have reports of more and of less, but those who escape with subatantially less seem to pay for it in increased hardware costs and unreliability. The vslue of ingenious specialists is stressed by Stapleton of Bankers Trust where s four hour run was turned (by people to 15 minutes.

The unreliability and breakdown frequency IMS will come as no surprise to users of O/S and CICS packages, and seems perhaps inevitable in such a large software system. But regular, ususlly daily breakdowns can be expected, long recovery times are normal. An early IMS/VS user, Eternit AG, Berlin, reported ot Guide May, 1975, 44 "problems", 29 IMS breakdowns and 15 IMS coldstarts in January alone. British Leyland reported to me a necessity of 217 fixes in the first six months of IMS use; the longest APAR response from Palo Alto was six months, for a fault which cost them about five hours to patch locally. They also reported a 360/30 16K application (including an 8K supervisor) is now using a 180K IMS partition after being "bridged".

Space prevents more examples, but I have an extensive collection of them. Even the material IBM publishes (such as the Bayer AG experiences) would seem damaging. I'm still waiting for counter-examples. There must be one sunshine story among all these disappointments? My hypothesis: *Large scale database software is never economically justified.*

Speeding the formatting of VDUs for online systems

AS the second of its extensions to Cobol, Software and Programming Consultants of London has developed software enabling a programmer for an online system to describe straightforwardly to the program the formats of visual display screens and the relationships between the fields on the screens.

The high-level description parameters used are fed into a pre-processor which generates Cobol code for handling the screens. This code can be incorporated directly into the program, or passed to it from a file, or through linkage.

The company have already produced a pre-processor for reports which is essentially an implementation of the Cobol Report Writer. This is an optional and often neglected part of ANSI standard's Cobol.

The new product, Frame Writer, uses Report Writer-like instructions to describe the screens. These consist essentially of line and column numbers to locate fields on the screen, and conventional Cobol descriptions of field formats.

The variable fields on the screen are seen as input-output pairs, since an output prompt will require information to be entered, and an input prompt should always bring a response from the system.

The two-way "conversation" between system and programmer at run-time is described to the pre-processor, with specification of the source of the output information.

Frame Writer is at present implemented on ICL 1900 and 2903 series machines, and could easily be implemented on the higher members of the 2900 family. SPC's Report Writer has already been converted to these machines.

Frame Writer has been installed for two months with its first user, whose identity has not been disclosed.

SPC claims that the translator used in its products can be adapted to translate any high-level instructions to Cobol source-code.

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SOFTWARE FILE

ICL to boost Safe's US export chances

ANOTHER product of an independent software house is about to ba given its first export push in the US, by ICL. The manufacturer, which has increasingly adopted outside products in the past few years, is to provide a US outlet for Safe Computing's SafeS production control system.

The product now known as SafeS wss originally developed by the Production Engineering Research Association (Pera) snd Scicon, as a result of a 1973 survey of companies' production control needs. It passed into Safe's hands when several Pera staff moved to Safe.

The Singer System Ten was selected as a suitable small online-oriented machine for implementation, and the product was released late in 1975 — just in time for the collapse of Singer's computer business.

When ICL took up Singer's interests, it assumed marketing responsibility for SafeS in most countries; but has, until now, not approached the US market.

ICL, although having offices in several parts of the US, hos decided to concentrate its initial SafeS marketing in an East Coast bsnd extending through Boston, New York, New Jersey, Connecticut and Washington. This is one of the densest industrial areas of the US, Safe explained.

Safe will retain responsibility for background support, and founding of a Safe office in the US "would be the next logical step," sdmitted John Evons, general manager of Safe's manufacturing systems division.

Several US companies have already expressed interest in the product, and Safe is confidently predicting the first sales before the end of this year.

SafeS is a principally on-line production control system, embracing bill of materials, inventory control, requirements planning, costing and factory documentation.

The principal goal of its design is that it should be usable by the staff normally responsible for production control, and should not require professional programmers.

Like most production control software, SafeS breaks up each product into its component parts, to several *levels* (SafeS allows a maximum of 11). This record of product structure serves as the database for most of the applications. Safe claims to have achieved speed improvements over its rivals, with more efficient methods of searching this logical "tree" structure.

Information can be called up on the VDU showing what components go into a product or, equally, a list of products in which a given component is used.

The operator can decide what components are required to meet any order, check whether enough components are in stock, and, if any are lacking examine the time and resources required to replenish stock and meet the order.

Copies of the files can be made for temporary alteration, enabling management and engineers to deduce the effect of a change in cost of any resource, or of a change in the make-up of a product.

As an ICL product, SafeS is appropriately below the company's mainframe Omac system, giving it a wide-ranging attack on the production control field at a time when demand for effective production control is increasing.

Further enhancements to SafeS, such as work-in-progress monitoring, costing on a day-to-day basis and performance reporting, are due to be released at the beginning of next year.

DG grabs library 'first'

THE library of mathematical and statistical subroutines produced by International Mathematical and Statistical Libraries, of Houston, Texas, has been implemented on a minicomputer for the first time. The library is now available to users of the Data General Eclipse series.

There is, however, no formal marketing agreement between DG and IMSL, and the software can still only be purchased directly from the latter company.

The IMSL development follows shortly the implementation of its UK rival, the Numerical Algorithms Group library, on Prime 300 minis (CW, August 18).

The growing requirement of such routines by minicomputer users is evidence both of their increasingly complex requirements and of the increasing acceptance of "packages" in areas of work traditionally reserved for in-house programmers.

Puzzler

```
      XX
   XX|XXXX
     X7
     —
     XX
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MOST skeletal division sums are long-winded affairs, with lengthy numbers involved. This one is an exception, but quite tough nevertheless. See page 39 for the complete calculation.

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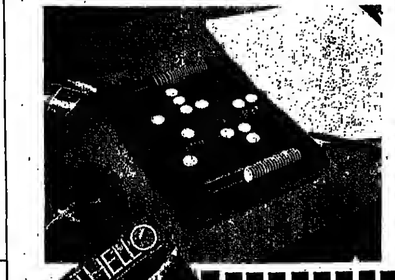

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EDITED BY STEPHEN BELL

Why men are No. 1

HASTENING to add that it is not implying male supremacy, the IBO has decided that the protocol for international data transmission shall be the number "one" for males and the number "two" for females.

Where sex is unknown, it will be zero, and 9 for when sex is not specified.

"In this age of woman's liberation, no significance is to be placed on the fact that 'male' is coded '1' and 'female' is coded '2'", an IBO spokesman said.

Reciprocal deal to widen TP market

AN international reciprocal agreement concluded last week should ensure wider marketing opportunities and better support in Europe for two popular teleprocessing monitors, Weatinghouse's Westl, for IBM machines, and Zeus-Hermes' Cortez, on ICL equipment.

Westinghouse has taken up marketing rights for Cortez in France, Holland, Belgium and West Germany. At the same time, Zeus-Hermes has undertaken to provide implementation support for prospective Westi users in the UK.

As well as clearly sliding Cortez — and the new version Cortez Plus — to reach a wider market, the move "will act as a springboard, helping Zeus-Hermes to move into the IBM TP market, following its success with ICL," ssid director Mick Punter.

Reciprocal benefits will, of course, also accrue to Westinghouse, until now a specialist in IBM DOS systems. It will show itself moving into a wider market, and the UK support for Westi will encourage sales of this product in the UK where it has, to date, hardly penetrated.

Zeus-Hermes' aid to Westi users will consist mainly of advice on, snd implementation of, applications software modules. Westinghouse itself will handle any systems software support required, "but we are essentially a packsge company," sald a spokesman. "We don't do consultancy."

The user can, of course, do his own applications development and not deal with Zeus-Hermes at all. The Zeus-Hermes consultancy service will be charged entirely separately and will have no effect on the price of the basic Westi software.

Neither company is currently considering recruiting specialist staff to deal with the srrangement; both are planning to wait and see whether demand is heavy enough for such recruitment to be necessary.

Zeus-Hermes slready has some experience of IBM teleprocessing configurations through its consultancy activities. Westinghouse does not have experience of ICL TPL, but contends tlint Cortez and Westi are similar in their basic approach.

Zeus-Hermes will initially be providing technical backup for the Continental sales force.

Easing the blockages

ANALYSIS of the structural properties of pipework has been eased, claims the Scicon bureau, by a software product which it has imported from Norsway. The package, Sesam 86C developed by Norwegian consultancy Computas, takes advantage of the fact that a typical pipework layout can be divided into large standard elements.

Sesam divides each of these "superelements" into small elements for the accepted finite element method of structural analysis. Since a super-element will have the same properties wherever it occurs in the structure, the Sesam method avoids re-calculating these properties each time. Multiple levels of superelements can be handled.

The software is available in remote botch mode on Scicon's Univac 1108s, or online from terminals in Scicon offices or a customer's own premises.

UK clients for the system have already been gained, in the fields of aerospace and turbine design.

PROGRAMMER NOTES

Reliable test of the 'fast worker'

THE question whether "productive" programmers are good programmers (CW, June 30) has been raised *again by a US observer*, who has provided, for a change, some practical figures correlating speed with long-term efficiency.

Unfortunately the writer, Jack Wolfe, of New York, is chiefly concerned to demonstrate that time limits on programming "aptitude" tests are unrealistic. Hence his samples are of programmers performing tests, rather than writing practical programs.

The validity of the comparison between the problems in an aptitude test and those encountered in the programming environment is a much argued point. Wolfe, however, contends that even assuming a strong correlation, the time limit factor still results in many promising programmers being failed in the test, and many "testwise college graduates" with no real programming ability being selected for the job.

"A company using such a test in the selection screening is likely to lose the careful, deliberate worker who re-reads specifications, for precision of interpretation and desk-checks carefully for accuracy in execution. Such a worker will seldom complete a test in which speed is a significant factor," says Wolfe.

"But such a worker may possess just the right attributes and good work habits for successful work in programming. Such a worker will moreover, prove to be actually faster because there will be less debugging and testing to do in bringing jobs to a successful conclusion."

Wolfe's conclusions are supported by figures which he obtained by conducting a test with a five-and-a-half hour time limit, which had already been assessed as sufficient for 99% of candidates to complete the test. The results showed a very weak correlation between speed and scores in the completed test.

Dividing the sample in half according to speed, and in half according to scoring, the slower but higher scoring candidates rapresented 22% of the sample. In other words, nearly half the high scorers would be rejected by a test with a more severe time limit.

One reader has already heavily criticised "the whizz-kid programmers who whizzed through programs. The aftermath", she said, "is left for the more conscientious programmers to deal with".

One cannot, however, be too idealistic about this. Obviously deadlines have to be observed, and there is a need for the programmer who will not only work quickly, but will be able to remain calm when called upon to rush. Even a careful programmer can make stupid mistakes under stress.

What, than, is the best combination of these qualities for an ideal programmer? How could these be tested reliably?

Looking at the other side of the coin, the problem could be not so much code or slowness as of poor scheduling. An important factor in programming productivity is surely the ability to organise work on several concurrent projects, yet this is not tested at all in conventional aptitude tests.

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Users turn spotlight on 2900 progress

SOFTWARE progress on the ICL 2900 series, snd particularly the choice of operating system, will be a prominent feature of the next meeting of the 2900 Club, on October 18 st London's Waldorf Hotel.

Taking as their theme "2900 progress — three years on", users and consultants will outline reasons for using 2900s in various software environments, and will give some of their practical experiences.

The latest operating system strategy, the DME 1900 emulation environment will be discussed by Phil Fellows, of Vickers Engineering group.

The slternative, "a flying start with VME/B", is the topic of M.B. Gardner, 2900 Data Centre Msnager of BOC Datssolve, Completing the trio, Dr Sprstt, of Kent University, will speak about VME/K.

The options in teleprocessing software will be discussed by D. Atkings, a consultant with CSI (UK). S. Quelin, of Methodes et Informatique, will go outside the pure software area, with sn account of the reasons for choosing s 2960. The day will be rounded off with a talk on future developments by Bruce Stewart, of ICL.

Tickets, at £17.50, including lunch, are available from the club's secretary, Arthur McCann, of Computel, Eastern Road, Bracknell, Berks.

Dutch date for Dissplа users

A MEETING of the users' association for the comprehensive plotting package Dissplа is scheduled for October 13, in Petten, Holland. One of the major features of the event will be a preaentation of new features in the product, including s conversational plotting packsge, known, appropriately, as Tell-a-Graph.

The meeting will also include presentations by local users of the inexperience with the system, and a report from the US user meeting, held in July.

Further information is available from Dutch agents Repko b.v. van Blankenburgstraat 58, The Hague, Holland. Tel: 010-31-70 608425.

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NOVEMBER 3 COMPEC PREVIEW + Bonus Preview

Following the resounding success of Compec at the Wembley Exhibition Centre last November, the show returns to the same venue next month with an even bigger line-up of companies eager to promote their wares. The show runs from November 8-11, and will be the subject of a supplement in Computer Weekly on November 3, where Computer Weekly as sponsors and owners of the show will be exhibiting and 5,000 additional copies of the issue will be distributed.

Topics to be covered include how microprocessors assist the peripheral manufacturer; how users are being used to change intelligent terminals into distributed processing systems; whither goes the mini-computer? threat from micros? are minis taking over from main-frames? marketing low cost commercial microprocessor systems; limitations of microprocessors; why U.S. exhibitions are more exciting than UK shows

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PEOPLE

Scicon board seat for O'Malley

APPOINTED to the main board of Scicon Computer Services, a subsidiary of British Petroleum, is Jack O'Malley who has been responsible for marketing at the Scicon bureau since 1976. He joined the company in 1969 as an applications consultant in the turnkey systems division.

Rising through the hierarchy, O'Malley became operations manager and as such was involved in the planning of Scicon's computer installation, established at Milton Keynes. He was appointed general manager, sales, in 1975.

James Robson, formerly European sales manager of Racal Zonal, has been appointed vice president of the European marketing division of the Wabash Tape Corp of Huntley, Illinois. He will be based in London.

O'Malley — Smith — Murray — Jackson

Frank Noone has been appointed sales engineer by Terminal Display Systems of Blackburn. He has been with the company for nearly two years handling internal training, customer liaison, etc.

Robert Corrao has been appointed CATV marketing manager for Jerrold Electronics, a subsidiary of General Instrument Corp, US. Prior to joining Jerrold, he was manager marketing planning for the community television systems division of RCA Corp.

Mike Pybus has joined OCLI Europe of High Wycombe, Bucks, the marketing and sales division of Optical Coating Laboratories of Scotland and California, as a market development manager. He was previously a technical sales engineer with the Barden Corp (UK).

Robin Dyke has joined Uxbridge based Grandmet Information Processing as programming manager. He has previously been a senior consultant at Data Logic for the last seven years.

Data General appointments

DATA General has made three new appointments, John Jackson as branch manager, Manchester, and Roger Smith as branch manager, Birmingham; both of them have been salesmen within the company; and Peter Murray as field service manager. He was previously a field operations support manager with Honeywell.

Trevor Ore has joined MBM Computers as project leader with responsibility to install an MBM system linking the regional depots of CMT Industrial Supplies Ltd. He was previously with Scicon.

Steve Chan, who spent the "industrial year" of his degree course at MBM, has joined the software development department of BML, the R&D, Interface and Peripheral Company of the MBM group.

DIARY

OCTOBER 11

Computing, the next twenty-five years. Dr Chris Evans. BCS Croydon branch. Fairfield Halls, Croydon, 19.15.

Speech recognition. Dr P. D. Green. BCS, North Staffs branch. Royal Oak Hotel, Stafford. 20.00.

Databases: Codasyl and Non-Codasyl. Basil Cousins, managing director of Compatol. BCS Reading branch. ICL, Lovelace Road, Bracknell, 20.00.

A historical view of input/output devices and storage. Dr D. J. Wheeler. BCS Nottingham branch. TI main lecture theatre, Nottingham University, 19.00.

OCTOBER 11-13

Electronic instrument exhibition. Electronic Promotion Group/Industrial and Trade Fairs Ltd, Bloomsbury Centre Hotel, London.

OCTOBER 11-20

International Business Show. Business Equipment Trade Association. National Exhibition Centre, Birmingham.

OCTOBER 12

The work of the Central Computer Agency. Reay Atkinson, BCS, Sussex branch. Old Ship Hotel, Brighton. 19.30.

Oracle — broadcasting the written word, David Wood. BCS Teesside branch. Teesside Polytechnic, Borough Road, Middlesbrough. 19.00.

OCTOBER 12-13

Meeting. IBM Computer Users' Association Telecommunications Group. Palace Court Hotel, Bournemouth.

OCTOBER 13

Why distributed computing? Dr F. E. Taylor. BCS specialist group. Prudential Assurance, Holborn Bars, London EC1. 19.00

OCTOBER 14

The International conference on computer applications in the developing countries — Bangkok 1977. Dr D. J. Clarke and Dr N. Revell. BCS specialist group. Zeus-Hermes Consultants, 2-10 Cleveland St, London W1. 17.30.

OCTOBER 18

Microprocessors. J. D. Klinker. IEETE. Lanchester Polytechnic, Rugby, 19.30.

How to recruit and keep staff. Monro-Frazer. DPMA Sheffield Branch, Royal Hotel, Barnsley. 19.00 for 19.30.

Effective operations management. Jim Read. IDPMA Bull Hotel, Gerrards Cross. 19.45.

Building on success cornerstones of development from 360 to 3033. H. W. Tuffill. BCS Nottingham branch. TI main lecture theater, Nottingham University. 18.00.

OCTOBER 19

Implementing minicomputers DPMA Central London branch. Control Data Institute, 77 Wells St, London W. 18.00 for 18.30.

Railway signalling techniques. J. D. Saker. IEETE. Scarborough Lecture Theatre, Science Labs, South Road, Durham, 19.30.

Using IDMS and data dictionary with Cobol. BCS specialist group. Polytechnic of Central London, 115 New Cavendish St, London W1. 14.15.

Human factors in the use of display terminals. Open discussion. Room U316, City University, Northampton Square, London EC1. 14.00.

Database design and use. Tim Bourn. BCS Manchester branch. Manchester Business School, Booth St, Oxford Road, Manchester. 18.00.

Performance evaluation. Professor P. A. Samet. BCS Newcastle branch. Barras Bridge Building, Newcastle University, Haymarket, Newcastle upon Tyne. 18.00.

OCTOBER 20

Some reflections from a new broom. D. Harding. BCS, North Staffs branch. Post House Hotel, Newcastle-under-Lyme, 20.00.

OCTOBER 18-21

Conference on database managemcat ystems. Association of System 2000 Users for Technical Exchange (ASTUTE), San Francisco, USA.

Management conference, computer services exposition, annual meeting. Association of Data Processing Service Organisations Inc (ADAPSO). San Francisco, USA.

COURSES

SIX short non-residential courses are to be run by the NCC in the North-East during October and November. They are: database concepts, October 27-28; online concepts, October 27-28; Fortran, November 8-9; project planning and control, November 15-16; computer concepts for managers, November 17-18; and structured programming, November 28-30. Further details from M. Pass, tel: 061-228 6333.

TWO courses under the general heading Accounting for the Human Factor are being run by BIS Applied Systems. Their titles are Effective Presentation and Reporting Skills, and Interpersonal Skills-Transactional Analysis. The courses are residential and the first will take place on October 24-28 and the second on November 28-December 2. For further information contact Stephen Helms, 70-80 Blackfriars Road, London SE1 8HD, tel: 01-928 9311.

THE Department of Electrical Engineering at the University of Salford is holding two ten-session courses on microprocessors and minicomputers and their applications. The first covers fundamental aspects and runs on Mondays from October 10-December 12. The second course is a follow-up dealing with more advanced topics and applications and also runs on Mondays, from January 9 to March 13. Each session lasts one full day. Each course can be taken alone. Further details from The Administrative Assistant (Short Courses), Room 2, University of Salford, Salford M5 4WT. tel: 061-736 5843, ext 448.

SNA NETWORKS are covered by several courses which Hutchinson-Scoggins offers. Titles of some courses are Introduction to SNA, SNA Protocols and Logic Workshop, and SNA for Network Operations Controllers. For details of all courses phone 01-499 4501.

SOCCER

THE Summer Computer League champion is Jadpu, which put the matter beyond doubt last week by beating SIA 6-0.

Latest results and league tables

Division 1

Jorpu 5, SIA 0

	P	W	D	L	F	A	Pts
Jadpu	7	7	0	0	33	11	14
Gryphon	8	6	0	2	43	13	12
C Transport	8	5	1	2	29	14	11
Lloyds	8	4	1	3	18	8	9
FNS	8	3	0	3	18	10	6
Comshare	8	3	0	5	17	30	6
SIA	7	1	1	5	11	27	3
Southwark	8	1	1	6	10	27	3
Computing	8	1	0	7	7	65	2

Division II

	P	W	D	L	F	A	Pts
Datascene	8	6	0	0	45	4	12
Xerox	8	5	2	1	31	11	12
Reuters	8	4	0	4	22	26	8
Extel	7	3	1	3	15	17	7
Comp. Weekly	8	3	1	4	18	21	7
Lambeth	7	3	0	4	21	23	6
Southgate	6	3	0	3	20	24	6
TSL	7	3	0	4	21	30	6
Inst Purdec	8	0	0	8	0	45	0

Division III

	P	W	D	L	F	A	Pts
Allergo	8	6	2	0	62	13	14
ICL	8	7	0	1	35	11	14
Datasolve	8	5	0	3	33	15	10
3M	8	4	1	3	27	17	9
Airfix	8	4	1	3	25	21	9
Control Data	8	3	1	4	24	30	7
British Rail	8	2	1	5	19	29	5
BIS	8	2	0	6	13	43	4
KCS	8	0	0	8	7	61	0

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OP SPOT

This week a new Op Spot columnist introduces himself . . .

A forum for your ideas

HELLO THERE. My name is Bernard Allen and this week I am taking over Computer Weekly's operations coverage, particularly the weekly Op Spot column.

Let me tell you something about myself. I started with the Magnet Computer Bureau, a member of the GEC-Elliott group, where on Elliott 503 system was in operation. It was a small, lively environment, with two operators per shift, and I was soon introduced to the various aspects of computer operations.

Then I moved to Barclays Bank, and became a member of a large shift concerned with the operation of two IBM 370/168s, running under OS MVT with Hasp and supporting a large number of applications. At Barclays I attended a number of DP courses to broaden my technical knowledge.

My next installation was that of the London Electricity Board at the Elephant and Castle. I gained further practical experience by operating a 370/158 using OS/VS1.

That is the background that brings me to CW and Op Spot.

Op Spot is concerned with computer operations — in all its aspects. This is a broad subject and each week I intend to bring a specific topic into focus. Some areas I intend to cover include:

Training: The amount and level of training available for operations staff varies greatly from one installation to another. In my experience operators, particularly trainees, often feel neglected in this matter.

Shift Work. All installations, regardless of size and the number of staff employed, work irregular hours to some degree. Shift systems are often the cause of serious comment in relation to such things as health and are sometimes the source of humorous tales — particularly the night shift.

Shift Allowance. Does the rate of allowance received by operations staff fully compensate for the inconvenience incurred by working unsociable hours?

Career Progression. In some firms operators are encouraged to move on to technical support or programming. Should operations expertise be regarded as an end in itself, or should it be trented as a prelude to other computing disciplines? In this respect I am interested in hearing from operators who have moved from operating and would like to know of any difficulties they might have encountered.

Communication. There is often a lack of communication between management and operators, and a lack of co-operation between operators and programmers. It might be interesting to consider these problems and how they might be resolved.

I would hope to broaden the format of Op Spot, using it as a forum where Computer Weekly readers can express their ideas and views. All communication is welcome, whether critical, humorous or topical. I look forward to hearing from you.

● **If you would like to contribute to Op Spot, contact Bernard Allen, at Computer Weekly, Dorset House, Stamford St, London SE1 9LU.**

Three bodies unite on privacy policy

FIRST of a series of joint statements on computers and privacy has been sent to the government's Data Protection Committee, which is drawing up proposals for possible legislation to protect personal data, by the British Computer Society, the Computing Services Association and the Data Processing Management Association.

The three bodies represent about 30,000 members of the computer industry.

The statement does not differ from views expressed in the three organisations' individual submissions to the Data Protection Committee last year. But, as Gerry Fisher, BCS retiring president, put it, "We felt that a joint statement by three major bodies representing people and companies in the computer industry would add weight to our separate submissions."

Alan Benjamin, director-general of the CSA, added, "It is important for the Data Protection Committee to find out if there are any areas the industry feels strongly about."

The first area considered by the three organisations is licensing. The statement, which framed the basis of Benjamin's presentation to the international conference on trans-border data flow, organised by the Organisation for Economic Co-operation and Development last month (CW, September 29), says the proposed Data Protection Authority should licence the use of information and also issue certificates of security to those responsible for operating the computer.

The statement says that work involving the use of personal data risks breach of privacy, so the public should expect that such work is done under controlled conditions. And it points out that the onus should not fall totally on the computer operations department because, although the department must provide security appropriate to the level of sensitivity of the data, in many cases it will not know what the data is used for.

The three organisations call for the formation of a statutory licensing authority which should be independent of government and supported by fees.

Fisher said a £10 fee for each application would cover costs, as estimates have put the number of applications at between 50,000 and 100,000, although it could be twice as many.

Other topics to be studied by the three bodies are the response time to a citizen's request for access to information about himself stored in computer systems; the role of reasonableness in drawing up security standards; the costs of security; and the harmonisation of legislation in different countries.

One organisation absent from these joint discussions is the National Computing Centre. It was invited to join in, but, as Eric Howe, NCC deputy director, put it, "We didn't think it really appropriate for us to go in. It would have meant seeking our members' views again and we did that pretty thoroughly first time round so we decided to let our members' views stand."

Doubts on IBM sales boom

● From Front Page

we will consider all the alternatives and the first thing we will look at is the 3033."

The bank is likely to be one of IBM's most important SNA customers.

Overseas Containers, running a 155 under DOS/VS and planning to switch to MVS, needs a second processor, but there is no question of switching the order for another 158 to one of the new IBM machines — or to an Amdahl or Itel system.

"The 158 has some time to run on the lease, and the second one, which we are getting in April, will be on rental," said DP manager Brian Barber.

"It will take about 18 months to get the system running in multi-processor configuration, and we will start thinking about 303x in two years.

"The Amdahl and Itel offerings are excellent boxes, and we wish IBM made them. If we had the leisure to check out their systems and to sort out all the possible problems ourselves, we would consider them, but we are heavily dependent on IBM software and support. IBM is anyway becoming more competitive, and we don't want the problems of multiple vendors."

At Dunlop in Birmingham, the 360/155 is about to be replaced by a 158, which will run under OS/VS1 where the 155 runs under MFT.

"We are not committed to the 158 and we do use plug-compatible peripherals," said a spokesman. "Our approach is to start with, say, the IBM 3330 disc drives and then try a plug-compatible alternative. But as far as plug-compatible CPUs go, we don't feel that they are yet adequately proven."

At Esso, operations manager Nathan Higginbotham says that the company is always looking at alternatives.

"We have only had our 158 running MVS for a year, so we are not ready to replace it. But Exxon does have an Amdahl 470 in the States, so we are not tied to IBM," he said.

Texaco is a subsidiary of a Norwegian bureau, and took over the lease on a 155 formerly used by the International Publishing Corp, IPC. At present running MVT with modified HASP, the bureau has no immediate plans for a change.

The Stock Exchange is fully occupied getting Talisman up and running on its 158, and is likely to stick with IBM for at least another couple of years.

Thomson Holidays, running a big holiday booking system on a 158, believes the fact that it is using a special real-time system based on assembler-coded software from KLM precludes it switching to other hardware.

The London Electricity Board, running a 158 under OS/VS1, is quite satisfied with the system. "We are determined to make the 158 a success and so is IBM," said a spokesman.

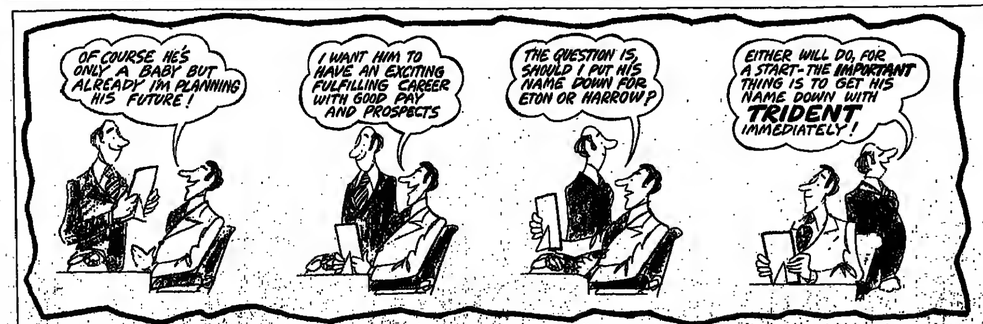
Freemans, the mail order organisation, is in the same situation, planning to continue with its 158 at least until 1980.

Sun Alliance, the big insurance company, has two 155s in Horsham, and another in Birmingham.

"We are always looking at cost-effective alternatives, but cost is not always the overriding factor," said a spokesman. "We have looked at the new systems, and Itel looks interesting, but we are not keen to be first in the field with both hardware and software."

Datastream, the indispensable tool for the financial community, is running a very full 158 under MFT.

"We are looking to expand," said a spokesman, "but we have not yet decided whether to move to a larger machine or to put in a dual system, nor have we decided on a future operating system. We would want to see the Amdahl 470 prove itself before making a commitment."



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LETTERS

Why not join the DPMA instead?

FOR the Data Processing Management Association to reply to the letter of Mr D. K. Allan, secretary of the Kingaton branch of the British Computer Society, would perhaps be presumptuous. After all, the letter was no doubt addreased to the BCS executives who, it is hoped, will make a conaidered reply in due course.

Meanwhile, Dave Allan aaka what can individuals do about the impending imposition of the "immoral and unprofessional" application fee and higher aubscription. The DPMA has a practical suggestion. Potential (and current) members of the BCS ahould consider joining the alternative computing aasociation, the DPMA.

Unlike tha BCS, whose membership has been "atagnating and is now declining, the DPMA ia flouriahing. Last month alone, application inquiries were equal to 10% of present memberahip.

In no way is the association interested in the traditional internal bickering of the BCS. What the DPMA is involved in is reflecting and promoting tha views of its members on a practical baais, auch as a stimulating survey — in conjunction with Langton Information Syatems — on the recent Carter report on the UK Poat Office. The industry award scheme introduced last year ia already regarded aa the major DP management award.

Other current activities include the aponsoring of an industry standards publication for first-tima uaers, the mounting of practical seminars, workahops, conferences and branch meetings.

Incidentally, the DPMA's application fee has remained at £1 since inauguration, ten or so years ago. Thia sum amply covers all processing coata and the association has no intention of increasing the amount.

If you are a responsible manager, aupervisor, practitioner or computer professional, tha DPMA would like to hear from you.

NEVILLE TAYLOR,
Chairman, DPMA
Maidenhead, Berks.

Tha Editor welcomes letters commenting on subjects published in Computar Waekly, or on original topics. All letters must be accompanied by tha writer's name and address, not necessarily for publication.

Frankenstein moral: Be kind to the beast

I FEEL very sympathetic with the views of Robert T. Street (Lettera, September 15) commenting on my article on machine translation. He speaks aa a former tranalator, a practitioner of a very akilled craft, and he feels that no machine can replace him. What he faila to realise is that in thia age machines must replace him, because human tranalators cannot possibly cope with the volume of tranalation required in the world today.

In the European Community alone the problem is so aerioua that a congreaa waa held in Luxembourg in May with the theme, "Overcoming the languaga barrier." There are seven official languagea in the Community and many documenta are required in all of them. Many are highly technical. There ia auch a shortage of trnnslators that many have to transinte documents dealing with branches of technology in which they have had no troining. They have to rely heovily on computerised dictionnries and thesauri. Many of the documents presented for translotion are ambiguous.

A number of translotors spoke in the discusaions at the cungreas and were in favour of machine translation. My own paper on Slunt was well received and several translators congratuloted me on it personally. In the developing countries there ia the very serious problem of the shortage of technical books in native languages. If these countries do not get books through machine translation they will not get them ot all. There is also un urgent need fur machine translation in other areaa.

This is the situotion, and whether Mr Street likes it or not, machine tronslation research will continue. Mr Street is doubtful, however, whether any such research can succeed. He stresses two points particularly: the difficulties in making and updating dictionories und the difficulties in the octuul translation process of dealing with nunnces of meoning.

These difficulties undoubtedly exist, but he must be aware that some texts nrc vnstly easler to translnte thnn others. Persunally I divide texts into two broad groups: "exact" texts nnd "non-exnct" texts. "Exact" texts include business correspondence nnd texts in muny hranches of science nnd technulugy where every term muat nnd can be defined exactly. "Non-exnct" texts include texts in such sciences os psychology, where muny nunncea of meaning occur.

I nm only concerned with "exnct" texts nt present, nnd in particular with business correspondence. The dictionury is small and chunges rarely, nnd the sentence structure is simple. There ure problems, hut I feel confident that they will he solved. We can loter move to more complex "exact" texts. Dictionuries are larger and need a good deal of updating. Many, however, are alrendy in existence in the EEC in Bruaseis and hnve been apecially dasigned and are particulorly suitahle for computer handling. I feel confident that the nacessary techniquea are understood for translating almost all "exact" texts.

It is when we come to tha "non-exact" texts with their nuancea of meaning that greater difficulties will be encountered. These difficulties occur whatever method of translation is ndopted. In my method the Intermediate Number Language is very flexible and different numbers can be allotted to different nuances of meaning. For example, if you feel that there's a difference of meaning between "a hearty welcome" and "a cordial reception," you can give the two expressions different numbers. In this type of translation very much depends on the dictionary maker. He can make his dictionary as sensitive as he wishea. Much also depends on the programmer.

Whereaa for "exact" texts style is uaually of minor importance, for "non-exact" texts it is often desirable to make the output as pleasantly readable as possible. These are fascinating problems.

Mr Street has a very sensitive ear, haa a knowledge of computers and is skilled in foreign languages. He is particularly well equipped for tackling these problems. Why not help us, Mr Street? Our address is: BCS Natural Language Translation Specialist Group, [illegible] Barrington Road, Bexleyheath, Kent DA7 4UW.

Mr Street suggests that I should transfer my energies to trying to promote better understanding between peoples. This, in fact, is one of my objects in researching machine translation. I want everyone who wishes, to have a computer pen-friend correspondence with someone in any other country without having to learn a foreign language. I also want children in the world to be able to read any of the world's books that they want to read in their own language.

I nm a lover of reading, as Mr Street evidently is. I, too, have read "Frankenstein," but I do not see the monster as Mr Street does. I sympathise with the unfortunate monster. When he was first created he was gentle, friendly, studious, highly intelligent and anxious to be loved. But because of his uncouth appearance, he was ruthlessly hunted like a wild animal by the local people and finally became brutalised.

In Mr Street's letter, Frankenstein's monster is the computer. This being so, the moral is: be kind to your computer. Start off by feeding it with easy sentences for translation. Bring it along gradually, until in the end it responds to your lightest word, your most delicate nuance of meaning. Perhaps in time you may even learn to love computers as I do.

WALTER GOSHAWK
Bexleyheath, Kent

Expensive truisms

"CORRECTNESS ia the main foundation on which reliable softwara can be built" (User View, Saptember 15).

Thia profound thought, which costs £95, will amaze DP practitionars the world over. No doubt Infotech International Ltd will be inundated with orders for thia revolutionary document.

Anothar astute comment in the report, according to User View, is that the moat important factor in software is that it ahould perform the taska required of it. Is there no end to the brilliance and originality of the "State of the Art" aeries? Now that Infotech has revealed the truth about software, there is going to be a major reappraisal of the whole foundations of which computer technology is based.

A 2,000-page report is available from Eureka Publications which makes another major contribution to modern computing practice. In essence, it maintains that central processors should be switched on before programs are run, [illegible] explains how to do this, [illegible] how to wire up a three-pin plug and a host of other mysteries of modern technology. The price is a mere £250.

[illegible]
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The SyFA system is being demonstrated at the NCC, Manchester throughout the day between 9.00 and 18.00 hours on Tuesday 11 October, Wednesday 12 October and Thursday 13 October.

Added Attraction. Between 16.00 and 18.00 hours each day there will also be the chance to win a bottle of champagne in our SyFA Le Mans competition. Come along and try your hand at computerised racing!

If you would like an invitation to see what distributed processing is really about, just call John Goodman at ComputerAutomation on Rickmansworth (09237) 71211.

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'The ill-equipped decision-makers'

THE micro in its many guises has already achieved such explosive growth that decisions on its implementation in systems are being taken by managers and engineers ill-equipped by experience.

This, according to Richnrd Peattle, engineering director of the Electrical Research Association, hna already been confirmed by early work carried out for the recently announced project, "The Engineering of Microprocessor Systems".

"While improving technology is making microprocessors easier to use," Peattle said, "there are now more people with less skills involved in system design and implementation, so thnt even better tools are required."

He pointed out that as microprocessors are introducing new technology and problems into many non-electronic organisationa, software had now become the dominant factor.

The project involves the associntion in a detailed investigntion into microprocessor syatem economics, hardware development aids and aupport software to be carried out in five interlinked phases. A principal objective will be to help syatems engineers appreciate the technical financial and managerial ospects of developing a microprocessor-based system.

The early work on the project has highlighted several trends in the industry that are not altogether beneficial.

For example, although support facilities for microprocessors are improving steadily, and the devices are achieving some comparison with minicomputers, the single chip microcomputer has, temporarily, reversed this trend. The physical constraints of the device currently make them harder to program and less general in application.

Again, although there is now a wide range of development hardware available, there has been little corresponding activity in software. High level languages are becoming available, but they put a higher demand on the development system, especially in terms of memory.

In addition, the project has shown that much of the high level software now available contains bugs thnt can play havoc with a new product development schedule.

These initial views on the microprocessor have stemmed primarily from the 40 companiea which have already agreed to participate in the project. The majority are end-user companies, many of which olready have practical experience of implementing micro-based systems.

Chris Nabavi, head of ERA's Microprocessor Development Group, surveys soma of the wida range of equipment available from which systems engineers must choose.

GIM's single bit

A SINGLE-BIT microprocessor for applications requiring an inexpensive sequence timer and controller has been introduced by General Instrument Microelectronics. Called a Sequential Boolean Analyser (SBA), the device is programmable in Boolean functions to facilitate the direct replacement of electro-mechanical circuitry in industrial applications.

Housed in a 40-pin package, the SBA comprises a logic unit, an associated 16-level stack to facilitate the execution of multi-term functions, a 1024 by 8 bit word ROM program memory and a 120 bit RAM which is used to store as many logic states. Thirty of the 40 pins are available as latched input/outputs, and can be mask programmed exclualvely for either function. If the interface requirement is greater than this, inputs and outputs can be multiplexed together on common pins.

A range of hardware and software development aids have also been produced for the device, including an evaluation chip where the ROM has been replaced by an external PROM for program development work.

Oxford seminars

MICROPROCESSORS, already quietly carving a niche for themselves among computer users, have been brought even more into the arena of public debate by Professor E. W. Dijkstra's attack, and Iann Barron's defence of the rise of the micro (CW, Auguat 18).

So a series of seminars, devoted to technical and applications aspects of micros, at Oxford University, is particularly timely. The first meeting is scheduled for October 13, at 4.30 pm, and will feature a review of developments in microprocessor technology, by Howard Kornstein, of Intal.

Further meetings, held once a week, on Thursdays, will deal with a variety of hardware and systems software topics, and applications ranging from process control to image processing. Speakers will include Tony Hoare, of Oxford; Professor Duncan, of Bristol University, and representatives of CAP Microsoft and University College London's Clip array processor team (CW, February 24).

Venue for the seminars is the nuclear physica laboratory, Keble Road, Oxford. Admission is free.

Gothenburg fair

ABOUT 100 manufacturers and service companies in the microcomputer field are expected to exhibit at the Mikrodator 77 trade fair and conference in Gothenburg from November 15 to 18.

A different conferance theme will be taken each day, covering microcomputer technology and the community, programming aids, microcomputer architecture, and maintenance and quality control.

Further information on the four-day Fair can be obtained from the Swedish Trada Fair Foundation, PO Box 5222, S-402 23 Gothenburg, Sweden.

8-bit octal register

FIRST in a range of 20-pin octal microprocessor interface devices introduced by Memory Devices will provide high speed interface capabilitiea for bua organiaed digital systems.

Manufactured in the States by Monolithic Memories, the first device is an 8-bit octal register, type SN74S374. It features 3-state outputs designed to drive the high capacitance and low impedance required by long buses.

Future devices will include Schottky and low power Schottky latches, registers, buffers and trnnsceivers.

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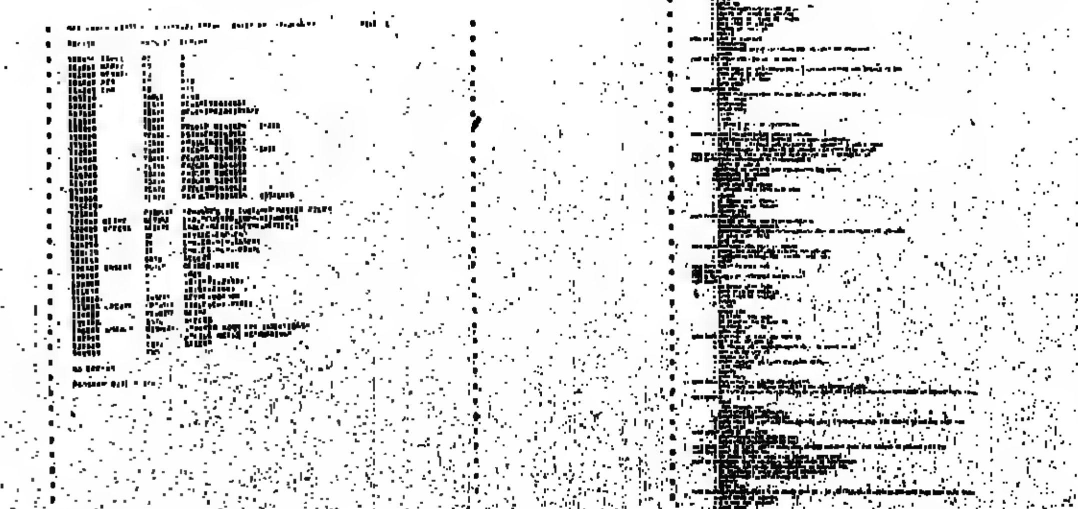

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... Computer Society. ... for his presidential year

Paul Samet ... "It is wrong to split the computer profession into academic and commercial divisions."

Bridging the gap in the BCS

THE academic versus the commercial: that perennial BCS discussion will once again raise its head this year, as Professor Paul Samet takes over the presidency.

On the face of it, there could be no bigger contrast between Gerry Fisher, the retiring BCS president, and Professor Samet.

Fisher, as head of management services for Associated British Foods, is deeply immersed in the commercial world, and his voice is always being heard at meetings and conferences asking the question, "But what does it mean to the typical commercial DP installation?"

Professor Samet, on the other hand, has lived most of his working life in an academic environment, from his initial training as a mathematician to his current position as professor of computer science at University College London and director of its computer services.

This contrast is, however, a superficial one.

In their current jobs, as heads of large computer service departments, both men are faced with similar types of day-to-day computer management problems, although in different environments.

And far from representing a schism in the BCS, it is a sign of health that the BCS can attract leading figures from different walks of DP life.

In fact, Professor Samet hopes to show during his year that there is no dichotomy of interest between the so-called academic and commercial worlds.

"For a start, it is wrong to split the computer profession into academic and commercial divisions," he comments.

"If a distinction is to be made, it is between those involved with computing techniques and those involved with applying those techniques."

"I would like to show that each side can gain from the other new perspectives, new dimensions to their own work."

The computing technician, in Professor Samet's view, is primarily concerned with an understanding of "systems" as opposed to particular applications, and with an awareness of the theoretical concepts that underpin the application.

This sense of the general rather than the specific; of the similarities rather than the differences underlying computer applications; of the long term systems requirements rather than the short term expediencies of daily DP life; these are the qualities that Professor Samet believes the technician can offer the DP applications person.

Most importantly, the technician should develop the technology that will enable applications problems to be solved more simply and effectively.

On the other hand, the applications person can give the technician a "sense of scale and of real life experience" and pose a range of interesting and practical problems to be solved, with an awareness that a reasonable solution today is often preferable to a perfect solution next year; that a general approach is only meaningful if it can be translated into a workable specific solution.

Professor Samet himself is in a good position to see the mutually beneficial nature of a bringing together of the two sides of the DP community, as he is responsible for running a large computer service as well as having a firm grounding in computing techniques.

During our interview, he suddenly leapt to the blackboard to explain how a mathematical understanding of the nature of multiplication could improve the speed of processors.

His enthusiasm was not just for the mathematical theory, but the fact that the result could be put to practical use in processor design. "And just think of the commercial impact if we could make a significant advance in understanding how to sort n items more quickly," he added, with a glint in his eye.

Like many other prominent figures in today's computer world, Professor Samet never started out wanting to become a computer professional.

Mathematics was his first love, and his first encounter with computers in 1951 did not entice him.

While studying maths at Cambridge, he went along with a friend to a lecture by Professor Maurice Wilkes, whose pioneering work on Edsac at Cambridge was well underway.

"I did not understand a word Wilkes said," Professor Samet now admits.

His next encounter with computers was when he joined the Royal Radar Establishment at Malvern, as a mathematician. But gradually he became enmeshed with the computer, as a programming adviser on the Deuce system of the Royal Aircraft Establishment at Farnborough.

It was at this stage he realised that the most important thing the computing technician and ... is to help others to use the machine more easily.

"Deuce was a beast to program in an assembler that did not even allow the use of ... names. In order to make it work properly, every bit had to become a personal friend," he recalls.

Although he found the RRE work interesting, at this stage he still had no intention of making computers his career.

But, at the end of 1957 allocations had been made for the establishment of a number of computer centres, including one at Newcastle, which was then part of Durham University.

After considering taking up another post in ... mathematics, he eventually plumped for the job as a lecturer in computing at Newcastle. He was now under the spell of the computer, and in 1961 he became director of the Southampton computer laboratory. Six years later he moved to University College London to set up the computer centre and became Professor of Computer Science in 1970.

"You know, it's funny," he says, "even just before I received the professorship, my mother was still asking me when I was going to get out of computers into a 'real' academic career as a pure mathematician."

Mrs Samet should not worry, for her son has made it to the top of his own distinguished tree.

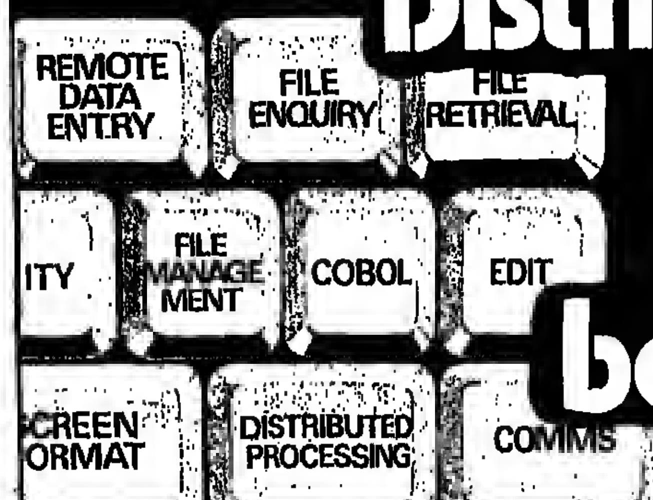
But his mother's question should give Professor Samet some food for thought, as he enters his presidential year at the BCS.

For she is not the only person to question whether computing is a profession in the same sense and of the same status as the established professions, like doctor, lawyer, mathematician or accountant.

Although the BCS is now an established part of the computer community, it has still not ... established that ... is unquestionably a ... profession."

If Professor Samet goes some way to bridging the gap between the "academic" technician and the "commercial" applications ... he may not resolve the argument about computer professionalism, but he will have made an important contribution to raising the standing of the BCS as a body which is ... of the cloudy theoretical heights of the ... as well as of the DP ... our feet.

● See Comput...



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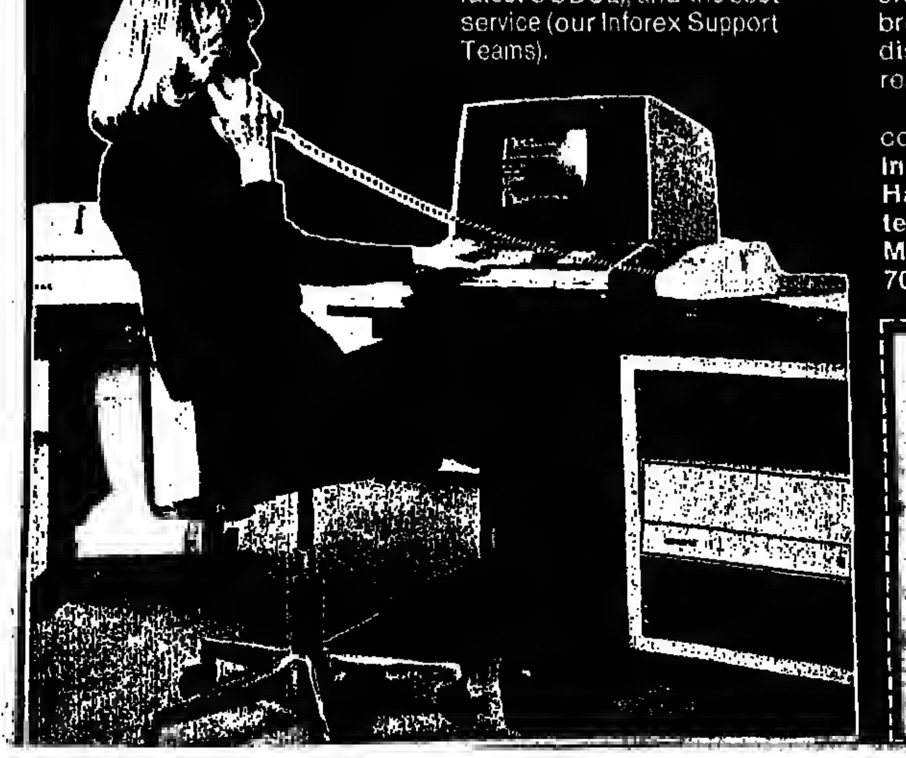

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THE AUTOMATED OFFICE / IBS PREVIEW

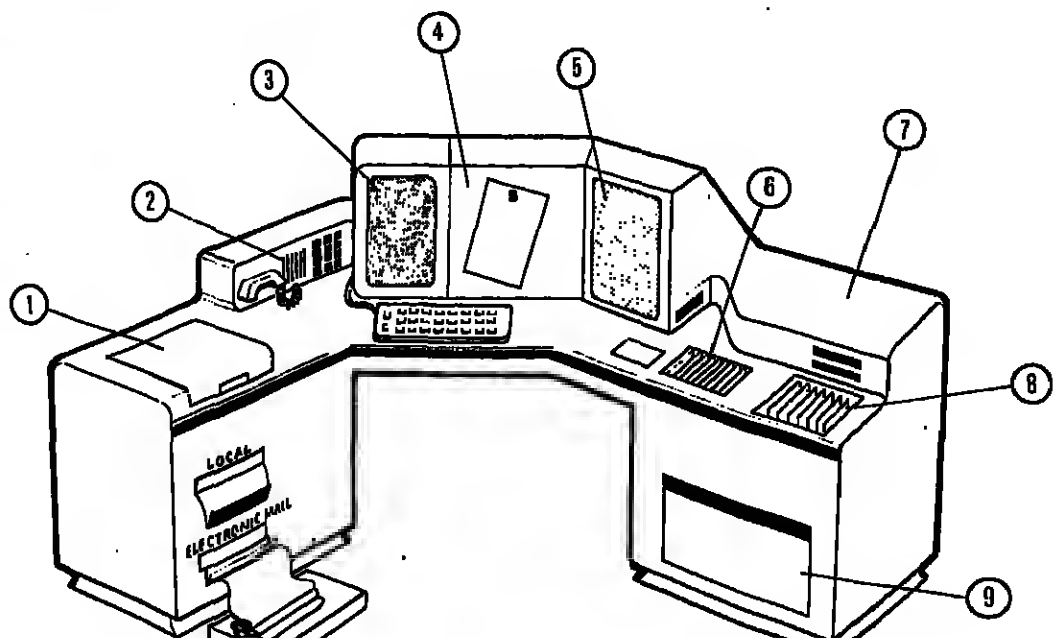
Changes in the office are occurring at an increasing frequency, giving rise to new concepts such as word processing, and the "automated office".

Forerunners of these and other eventual systems can be seen at the 1977 International Business Show to be held at the National Exhibition Centre, Birmingham, from October 11 to 20, and a preview is given in this supplement.

But despite the progress, doubts whether such systems will become an integral part of the office, or even whether they should be allowed to, are still harboured by some.

The opening article, by Tom Stewart and Leela Damodaran, discusses the merits and disadvantages of the office of the future, and the impact it will have on those who work there. A possible design of the future workstation, an integral unit through which communications and work will be channelled, is also given.

One forerunner, in terms of electronic mail, could be the Comays network currently used worldwide by its designers, Hewlett-Packard. John Conry a systems analyst with the company, discusses this system.



The automated office workstation for the information assistant — unlikely ever to be built as one unit, but the components are available, or will be soon. Key: 1—Flat-bed document input systems for copying (both local and remote) and scanning to input to computer system. 2—Loud speaking telephone with programming functions. 3—Nearly vertical A4 VDU screen for access to information system, word processing system and central records. 4—Magnetic board for holding source documents. 5—Microfiche reader, also accessible to computer control. 6—Microfiche store. 7—Two floppy disc drives linked to local microprocessor and also to central large computer network. 8—Floppy disc store. 9—Personal belongings locker.

'Motorways' to the office of the future

By Tom Stewart and Leela Damodaran

Tom Stewart, a lecturer in Ergonomics at Loughborough University, has been involved in a number of research and consultancy projects in the man-computer area ranging from computer system evaluation and dialogue design to hardware evaluation and terminal design.

Leela Damodaran is a research fellow in the Department of Human Sciences at Loughborough. She has, since 1970, been involved in teaching and a number of research and consultancy projects at the university. Her principal research interests have included studies of man-computer interaction and its implications for work design.

THE office is essentially an information processing system in which decisions are made and information is transmitted, stored and retrieved.

The appeal of the automated office is an improved throughput of information and decisions comparable to the sizeable increases automation has brought to production. However, at present, office automation has been patchy and fragmented, rather like a poorly planned roadway system. In some areas the information flows along six-lane motorways whereas in other areas it crawls along dirt tracks.

One current "motorway" involves photocopying. It is easy to generate hundreds of crisp, clear photocopies (if the machine is properly adjusted) and distribute these to all manner of people. Receiving or making a photocopy of a document or report has become a substitute for reading it. In fact, it is impossible for anyone to read the sheer volume of information which photocopying has exploded into the office.

Another "motorway" is the automatic production of standard forms, letters, invoices and bills which computer technology allows us to churn out in their thousands. However, someone somewhere has to read the letter or form and make a decision accordingly. Indeed many people are fully employed sorting out the queries and problems resulting from mistakes and errors which creep into such systems.

These "motorways" unfortunately feed into "dirt tracks." Although computer databases, providing complex retrieval and access facilities, may be commonplace, a large part of the traditional office function involves the storage and retrieval of documents and other originals which may be more than simply their apparent information content. These pose quite different problems in order to store and retrieve them accurately and efficiently.

There are systems to automate filing cabinets using drawers which run on electric motors or, alternatively, an entire stock of physical documents may be microfilmed and stored on fiche or reels. However, neither of these is entirely successful nor do they replace the traditional filing cabinet which occupies every office we know. One "dirt track" at present concerns the creation of documents. The creative process of writing a letter or report, in our case at least, involves scribbling barely intelligible marks on a piece of paper which are then typed up and corrected and despatched in a readable form. It is possible to use a dictating machine but this is an unusual skill which not everybody has, and subsequent transcription is very labour intensive.

Another "dirt track" involves making telephone calls. The introduction of STD both within the UK and in Europe should have significantly speeded up the process. However, it still remains possible to take a long time actually to get into contact with the person you want. The local exchange may be busy or you may have to go through a number of secretaries to get to the right person. All in all, many phone calls turn out to be a lot of work rather than a simple straightforward communication exercise. This either involves the secretary in a lot of work producing the numbers for the boss, or if you are dialling yourself it can be a very lengthy and frustrating procedure — especially with long telephone numbers.

Two "motorways" at present, therefore, are the production of standard forms and photocopying and three "dirt tracks" are the creation of text, the storage and retrieval of documents, and the making of telephone calls.

It is in the latter three areas that we believe the most significant developments in automating the office will come about in the near future. There are a number of ergonomic problems associated with their development and use. For information storage and retrieval the ergonomic problems involve indexing, retrieval procedures and how to resolve the difference between storing physical manifestations and data. For the creation process, there is a number of options such as instant typing from dictation with automatic punctuation and

● Turn to Page 18

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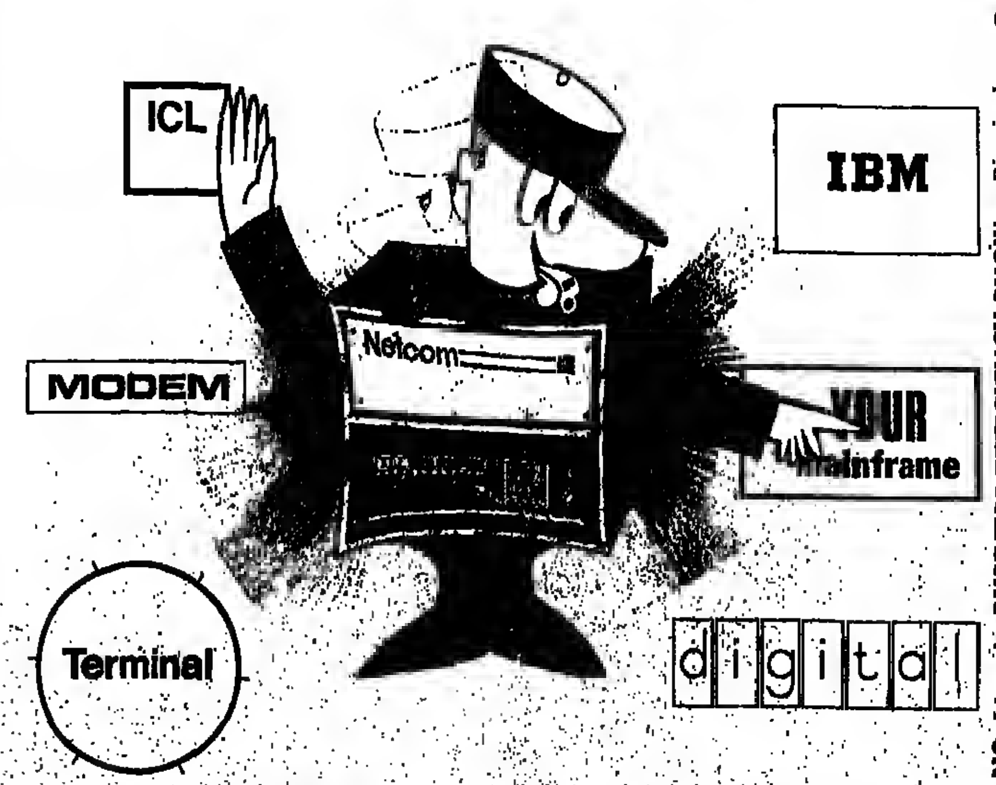

NETCOM is a customised network communications processor and solves the problems caused by incompatible terminal protocols to enable devices with differing speeds, character lengths and codes to communicate with each other.

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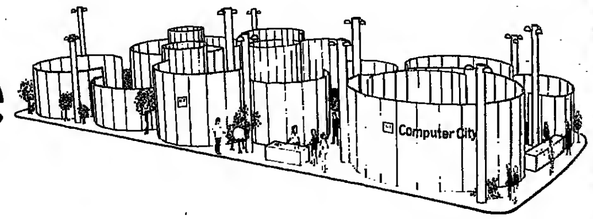
Robin Webster presents a preview of the 1977 International Business Show, which opens next week at the National Exhibition Centre in Birmingham. . . .

The centre for 'wise business buying'



One of the attractions at the IBS will be ICL's Computer City, a walk-around exhibition, which will feature a precincts, a news kiosk and a theatre.

A WIDE variety of new office equipment will greet visitors to the 1977 International Business Show — formerly the Business Efficiency Exhibition — to be held at the National Exhibition Centre, Birmingham, from October 11 to 20.

Its theme will be "The centre for wise business buying".

The Duke of Kent, who is to open the show, will arrive by helicopter to tour the exhibition centre, and the organisers BETA, the Business Equipment Trade Association, are expecting over 100,000 visitors during the 10 days.

Some companies such as ICL, last seen nine years ago are making an appearance again after a long absence from the previous BEE exhibitions.

The emphasis of product ranges is of the "automated office" concept, with desk-top business systems and specialised furniture. Word processing equipment is also prominent.

Running concurrently with the exhibition will be a range of seminars organised by the British Institute of Management looking at "the office as the administrative nerve centre of a business".

This will consist of a programme of 24 seminars, covering three major topics: computer techniques, office systems, and administrative management. Specific seminar topics will include distributed data processing, staff selection, training and development, management information, word processing equipment, and productivity in the office.

The seminars will take place in the Metropole Hotel, adjacent to the exhibition centre.

Univac will provide a specially designed computerised information system for visitors. It will use U200 terminals sited us seven main information stands and provide answers to inquiries relating to more than 500 production categories on show. Hard copy print-out will be available.

Univac will also display its UTS 400 and UTS 700 intelligent terminals.

As the IBS is a focal point for the office equipment/business world, it is hardly surprising that some interesting new products are being launched there, including the **Honeywell** Page Printing System. This will compete with the IBM 3800, but is offline, uses different print technology and delivers and collates individual sheets of paper.

Using an electrostatic printing technique, the PPS operates under microprocessor control, reading seven or nine-track print image magnetic tape, and converting data from these to printable symbols. Copy can be generated at the rates of 90, 140 or 210 pages per minute; equivalent to about 8,000, 12,000 and 18,000 lpm respectively.

It is aimed at all mainframe users, such as those with ICL, IBM and Burroughs equipment.

Hewlett-Packard will be launching a new desk-top computer system, the Series 9800 System 45. This features a 12-inch display, use of the new ANSI Basic, applications software and an optional graphics package with high-speed hard copy output.

ICL has designed "Computer City", a new walk-round exhibition complete with precincts, a news kiosk and a theatre.

ICL's whole range of computer systems for small businesses and distributed processing applications will be featured, with the emphasis on the use of video terminals and direct data entry devices by unskilled staff.

Main items of the display will therefore be the 7500 Series of communication devices, and the 1500 Series of transaction systems. They will be driven by a 2903 Series and n System Ten 220 Series computer.

On the **NCR** stand will be a wide range of computer, point-of-sale and microfiche processing equipment. Among these will be the **NCR 850** minicomputer to be shown with a line and matrix printer, a television repeater screen, and four VDUs.

From its PoS range, there will be the NCR 255, online to an NCR 726 minicomputer with a laser slot-scanner checkout, and the NCR 250/7600 for the first time with an OCR/A wand for product code reading. Complementing these will be the NCR 2060 and NCR 2135 electronic sales registers, for the restaurant, and supermarket fields respectively.

Word processing is now employed by many offices for the preparation of original documents, and one of the companies supporting the trend is **IBM**.

The IBM Word Processor 32 is designed for offices with a high throughput of typed material and can handle input from most types of storage media. It is based on the System/32 computer and uses removable diskettes or fixed disc storage. Entered text can be edited and reformatted with new inputs.

The IBM Office System 6, also on show, comprises the 6640 Document Printer, the 6580 Magnetic Card Typewriter and the Office System 6/450. The 6640 is a high-speed printer which uses an ink-jet printer to produce documents, reports and address letters at up to 60 chps. It has a choice of fonts and languages as well as being able to communicate with other IBM machines.

The 6240 Magnetic Card Typewriter enables typists to revise their work before printing the final copy as well as printing it out at 55 chps. And the Office System 6/450 has modules to deal with the same needs of office correspondence. These include an ink-jet printer, a diskette unit and a VDU.

Wordplex will be demonstrating three features of any word processing equipment geared towards improving cost effectiveness.

These are Optical Character Reading, used to transfer data from a suitable printed character into the word processing unit; remote communications to permit linking of remote Wordplex systems via the telephone for the transfer of data, and an interface to typesetting equipment to simplify the technique for organisations with such a requirement. Wordplex models 5 and 7 will be shown.

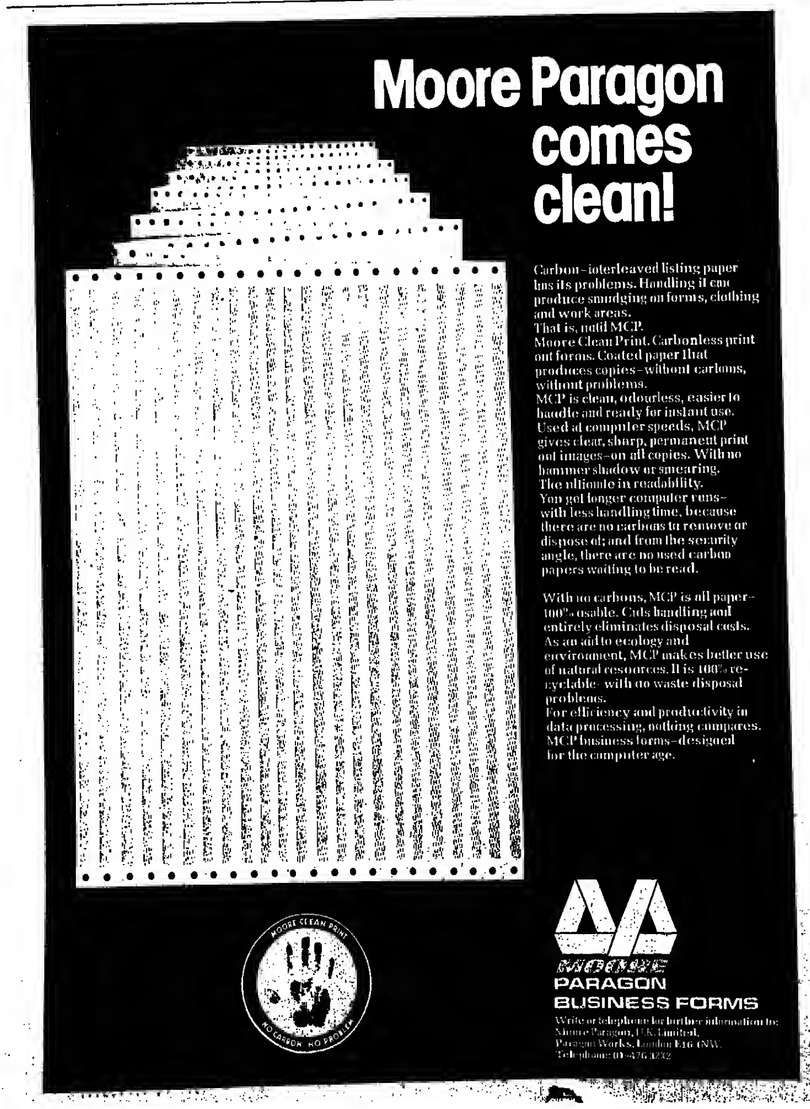
Infotec 7000 word processing equipment will be on the Infotec stand in four versions. The Infotec 7000 complete with typewriter — the new Sweet Infotec, the Twin Station Infotec with extra printer and control panel.

The Infotec 8000 features a transceiver system which will transmit a page in less than a minute, and will be exhibited.

Monitor, an automatic and

● Turn to Page 17

Midland-based computer bureau Applied Computer Techniques celebrate the 500th customer for its CompAct 6 service at the International Business Show when Henry Cooper presents a cut whisky decanter and glasses.



IBS a launch pad for new products

Gracing the Altergo Computers' stand at IBS will be the woman racing driver Davina Galica.

● From Page 16

processing control system, will be launched by **Lanlar**. Micro-based, it monitors, analyses and controls throughput of word processing centres.

A new range of word processing equipment will be available from Computer Data and Machines. The range, entitled Contessa, compdses three basic models. First is the Contessa 5000, an 8K micro-based system with three mini diskettes or dual double density floppy discs, a 55 chps daisy wheel printer and an independent keyboard.

The 6000 has a single line display for text entry and correction, but is otherwise the same as the 5000. Top of the range is the 7000, which offers a complete VDU and up to 64K main memory on mini diskettes of 1600K with dual density floppy discs.

Unlimited range

TWO significant enhancements to the computer output microfilm systems will be introduced by Bell and Howell at IBS. These are a stroke generator claimed to provide an unlimited range of character sets and a 6250 bpi tape drive.

Bell and Howell says that the stroke generator can produce upper and lower case characters in three sizes, and that these can be standard, italic or bold. It can be retrofitted to existing Bell and Howell 3700 systems.

The 6250 bpi tape drive runs at 75 ips and permits data to be input to the COM system's minicomputer controller at approximately four times the rate previously available, according to Bell and Howell.

Another word processing company, BDP (Word Processing), will feature its BDP 90 model with mini discs. The system incorporates a daisy wheel printer with integral keyboard, linked to dual mini discs.

Three versions of the D2100 word processor from Dataplex will be exhibited, each incorporating 128 character, buffered keyboards, enabling quick correction of errors. Also, there will be the programmable Dataplex D2900 with visual displays for easy reformatting of text.

Office computer ayatama are also show, too. Daro Office Equipment (UK), will offer a choice of systems, from the electromechanical model 1350 to the model 1720 office computer system. The 1720 is designed to handle primarily invoices, stock records, sales ledger accounts, payrolls and general accounting. A magnetic stripe card option is also offered.

Diamond Business Machines will be showing its new Financial Management Systems Packages for the first time. These have been designed with management information bias, but can be tailored to the individual user.

Klenzle Computers is using the IBS as a launch for its Klenzle 2200 office accounting computer. This is micro-based with 16K to 32K memory. Software for all general accounting needs are supplied free for this, and for Klenzle 2000 and 6600 models.

Altergo Computers will launch a micro-based system that will run word processing software. And the recently released Avenger systems will be there, showing applications such as sales order processing, sales ledger and payrolls.

From the recently revived Compucorp, which at one time disappeared from the calculator/computer market, will come a new desk-top computer, the Compucorp 625. This has up to 64K storage, a mini floppy disc, a 40-column printer, a VDU screen and will use Basic and Assembler.

In its calculator range, will be the Compucorp 326 and 327, which both feature cassette storage.

A new office computer system is to be introduced by **Datasaab**, showing the D12 MLC, which uses magnetic stripe cards for order entry and alpha-matching applications.

Texas Instruments will have its full range of calculators on show, from the TI 1000 at the bottom of the scale up to the TI 59 which is a hand-held programmable model.

Independent business computer manufacturer, **CTL**, will have a "hands on" presentation and demonstration at its stand. Visitors will be able to use terminals to run jobs on a CTL Model 8050 computer with 9.6 Mbyte storage, a line and serial printer. CTL's business systems are based on its Series 8000 line of products.

Offered by **Computer Ancillaries** will be a low-cost data entry unit and a desk-top microcomputer.

Launched this summer, the MAEL 1841 data entry device uses either cassetta or diskettes, and can be user programmed. It incorporates a 4K micro, a VDU and a single diskette facility. The MAEL 2841 microcomputer is the first desk-top model in the range and incorporates 8K memory, a VDU, keyboard, twin floppy disc drives and a high-speed printer.

Tektronix is showing three computer graphics products; the 4006 low-cost terminal, the 4015-1 large screen terminal and the 4051 graphic computing system.

The exhibit is designed to demonstrate the versatility of these systems in general business applications.

Data capture will be highlighted by **Data Recognition**, which is showing the Datatag 4 and System 83.

Datatag 4 reads computer and hand-written bar marks on price tags to allow the tracking of stock movements.

The full range of Telexers from **Saggicorn Electronics** is being featured. These produce telex ready paper tape from a standard IBM golf-ball typewriter, an IBM MCII word processor or the IBM 82 memory typewriter.

Canon Business Machines is launching its first reduction copiers. Its calculator range begins with the Ruler 8 liquid crystal display model, through to the Multi 8 which has dual displays one above the other.

Making its UK debut from **Dymo Business Systems** will be the TLR (Transaction Log Reader), a high capacity sales recorder produced after a joint research programme with a US oil company. The TLR allows substantial reductions in paperwork.

Data Maintenance, the on-site disc cleaning company, will have a full range of equipment and services on its stand, including the recently released DML 656 Disc Pack Inspector, as well as cassette and floppy disc cleaning equipment.

Optical character, mark and wand recognition systems are to be displayed by **Kenrick and Jefferson's** Business Forms Division. Emphasis will be on photo processing order systems, regular payment systems, and shop floor data capture.

A number of new floppy discs, including a minidisc, and new disc cartridges for IBM-type 2315 and 5440 systems, are among the products to be exhibited by **Willis Computer Supplies.**

Any person seated at this desk can do the work of three people.

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olivetti

THE AUTOMATED OFFICE/IBS PREVIEW

Typewriter soon a 'thing of the past'

By John Conry

The Hewlett-Packerd dete communicetions system HP-2026, is a commerciel equivelent of Hewlett-Peckerd's own in-house syetem, known as Comeya. Here John Conry, systems snalyst/progremmer et Hewlett-Packard, diecusess the development of Comsye over the years and indicstes how the system end its commerciel equivelent might evolve.

EVER since the day nine years ago when Hewlett-Packard decided to develop an internal high-apeed data communications system which uses ordinary voice-grade telephone linas, thcre has been a large degree of interest in the system shown by other users and potential users of dats communications systems. The reasons for this are probably because the way a computer manufacturer tackles its own data communications tasks is buund to be intrinsically interesting, and because right from the early days the system has been inanifestly succesaful — particularly in saving costs. The end result of this interest came earlier this year with the launching of the commercisl equivalent of the system — the HP-2026.

Architecturally, Comsys is fairly simple and straightforward. It is based on the company's established HP 21-MX E Serlea computer, the HP 2645A microprocessor-based VDU and a new operating system which is a modified version of the HP-2000 series' DOS III system. Each unit can be equipped with tape drive and line printer. There are altogether 94 Comsys locations worldwide within HP.

Despite its simplicity, Comsys is much more than a dedicsted data communications system. It transmits internsl "telex" type messages called "comgrams" between office locations in company parlance. It offers the facility of distributing lengthy management reports nationally or internationally at high apeed and is used for the handling of inter-office buainess such as orders, invoices, statements and credit notes. The differing requirements for repairs, parts and complete systems are taken into account on each document. Apart from these uses, the system hardware can be used for routine data processing functions in between transmissions.

When a user wishes to use the Comsys system to handle an outgoing message or document, he keys in a job name pertaining to a particular document to start and is then taken through a series of requeats on simple recognisable screens appearing on his terminal: each of these screens must be filled before the data can be filed for transmission, thereby reducing the possibility of incorrect or incomplete messages. The question and answer format compares very favourably with standard Post Office transmissions where no such controls sre exercised.

Hewlett-Packard have developed their own series of screens to cope with particular office routines, but a special sub-system allows the user to design his own screens to suit his particular requirements. The sub-system is called Data Entry Application Language, DEAL, and allows non-programmers to make full use of the relevant Assembler routines.

Incoming messages are first stored on tape and are then processed according to job type. In Hewlett-Packard's Winnersh Offices, most incoming comgrams are printed on a high-speed printer and distributed by hand internally. However, the Winnersh office also acts as a receiving and transmission station for comgram messages from other UK offices not yet equipped with full Comsys facilities.

Once identified as such by the operators, these can be linked directly to the telex system via five-level paper tape without the staff having to re-key the message. Comsys also features auto-answer — an Ansafone-type message-receiving facility which will accept incoming data automstically, even when the computer room is unmanned.

The other importsnt area of uae is the distribution of mansgement information. A mainframe computer in Geneva prepares a number of spooled reports and these are sent by Comsya to various international offices. As the amount of local data procesaing increases with the availability of HP-3000s, comparative in raw processing power to an IBM 370/145, this type of use for Comsya is likely to drop off on an international level, but the system certainly gives the company flexibility in dealing with the processing of management information. It is also likely to continue to be used for disseminution uf reports on a local level.

Apart from these regular functions, Comsys also gives the company the ability to transmit one-off pieces of information. A notable example of this was when a user within the company had been trying for some time to obtain a copy of a particular program not available locally, but he was uble to obtain u copy of the program from the US via Comsys in less than half an hour: transmission itself took just 45 seconds.

In the UK there are at present just two Comsys receiving stations; at Winnersh and at South Queensferry. Most UK data is routed through Winnersh, and all outgoing traffic goes to the HP European message-switching centre in Genevn. Every day there are at least two complete "cycles" comprising one outgoing session and one incoming session, morning and afternoon. On a typical day, the UK Comsys might receive 350 messages from other parts of the world, with approximately the same number of outgoing ones.

It is relevant here to mention cost savings. In six years, the volume of data handled by Comsys Central in Palo Alto has increased by a factor of 80, to 2 million characters per day, at the same time the cost of internal toll charges made by HP's corporate department has increased only by a factor of five. In fact, since 1973, the charges have actually come down by 60 per cent and the cost to the user department of transmitting a 500-character message, about 80 words, is now a paltry seven cents in the US.

The improvement of modems and the increasing use of very high transmission speeds has undoubtedly been the main factor in these improvements. The Comsys system terminals are at the moment transmitting at 2400 and 3600 baud and this could increase to 4800 if there's a successful outcome of discussions now going on between the company and various telecommunications authorities.

In the meantime, there are some other interesting possibilities on the horizon for Comsys. One is to exploit Hewlett-Packard's versatile HP 2645A display terminal a step further, and use it as an office sending and receiving station for Comsys. In o way the UK is an ideal proving ground for the development, as there are a number of branch offices are large enough to justify installing full Comsys facilities, but needing to be linked in to the system.

The HP-2645A is a cartridge-based terminal which features "soft" or near programmable key facilities which could be used for storing screen formats. This terminal could record today's branch messages and transactions on cartridge and inter transfer this over voice grade lines to a Comsys station at either Winnersh or at Altrincham, the company's Northern office, which will be getting a complete Comsys station in the near future. Another development over the coming months is the availability of the HP-7920 50 Mbyte disc as an optional extra.

Recent developments in the realms of the mini and micro computer are bringing us nearer to the reality of an automated office: in fact, Comsys can be configured in such a way that certain computerised office functions are already possible. For example, an office clerk with a terminal on the desk can type in a telex message destined for another company office, or request the status of a customers' account; by typing a code into his terminal a manager can request the production of a sales report.

Future enhancements to Comsys will include the facility to attach printers to terminals, stricter security to prevent the unauthorised use of confidential data, use of mini cassettes for storage and retrieval of data, and a priority rating which will enable the terminal response time to be controlled.

Soon, the typewriter and filing cabinet will be things of the past. With satellite communications and high speed transmission of data will be moved over the face of the earth at a rate of a thousand 20 years ago. The use of computers in the office will reduce many of the laborious manual tasks associated with office work, leaving people free to use their skills to better advantage.

Towards tomorrow's office

● From Page 15.

the use of word processors to try to avoid typing and retyping of drafts from the unsatisfactory creation of initial drafts.

With regard to telephones, of course, the opportunities for automotion are considerable. One big advantage will be the possibility of programmed exchnnges where you can, for example, leave a message that a call has been made or if a number is engaged you can ensure that when the line is clear your call will be connected. Various improvements like this well certainly appear in the business market very soon and it should mean considerabla savings in time and effort.

Of course, there is the problem that it may be impossible to uae your own telephone if several people have instructed the system to call them back when your phone is free. For some time, these developments will occur more or lcss independently but what we are beginning to see for the future is integration of office systems.

Manufacturers will integrate their equipment into other systems or make link-ups which were not previously considered. For example, the Post Office Viewdata system, essentially linking the telephone and television, provides a facility for atorage and retrieval of information and ultimately for communication. It becomes less necessary to have your own set of reference documents if you have a Viewdata terminal and can access some major source relatively easily.

However, other exciting combinations are possible. Once documents are created using word processing systems then it becomes possible, having captured the keystrokes and electronically transcribed the material, to process and manipulate it in a number of woys. There is no reason why it should be turned into paper straightaway or indeed perhaps at any time since it can be transmitted to another display terminal over telephone wires, stored electronically, or manipulsted or added to other information.

So it becomes possible to have an integrsted office system with a single means of holding, transmitting or storing documents, letters, forms or whatever. All are handled in roughly the same wsy and turned into the same type of aeries of codes and pulses. The resulting interconnected system is rather complex and could lead to problems. For example, it is easy enough to operate a photocopier: you press a button and you get a copy. If you make a mistake, you gat extra copies and, like Mr Coleman and his mustard, many copier manufacturers make a lot of money from people making copies by mistake, however, at least it is relstively fail-safe.

In the worst case you may gat 50 extra copies or you may even damaga the machine slightly but when systems are integrated into other systems, if you make a mistake in operating the copying system you may well end up ordering atores directly from Australia or cancelling your pay cheque or sounding a bleeper in the managing director's office. The increase in complexity as a function of the interconnectiona la considerable. It is quite different operating a system from operating a single piece of equipment or evan from operating a serics of placas of equipment.

As a result, in the short term at least, there may be fundamental differences in the way that the manufacturers sell their integrated office systems. Ona can envisage that the IBM office systems will be basad on typewriters and computers. The Xerox office syatems will be based on photocopiers and the Roneo Vickers office systems may well have grey steel filing cabinets and duplicators as central concepts in their systems. These competing approaches will place emphasis on different types of equipment. In addition, it will no longer be a matter of selling a place of equipment to a secretary or to her boss, plugging it into a socket, pressing a few buttons and standing back to collect the admiring glancea. The selling of complex office systems will involve a considerable degree of tailoring to the needa of the particular organisation.

In the past, computer systems have in many cases been sold on their potential rather than on their actuality. For example, the salesman promised all aorts of possible facilities and the customer had to work with the company and his own systems people to maka tha equipment work.

This, of course, worked for a time but customers are becoming far more demanding and it is no longer posaible for manufacturers to get away with this to quite thasame extent. Certainly in the office systems market it will be so competitiva that this will not be posaible and it will be essential for the manufacturers to sell with their systems (or perhaps sell their systems with) expertise in analysing the functions and the needs of the office. This will involve finding out how best to fit automation into the existing office or perhaps redesigning tha office to ault the form of automation.

As a result there may ba a change in the type of companies offering systems. For asample, sevaral software and managament consultancies are developing or have developed their own versiona thus contributing to the office system end they are in a particularly good position to meet the needa of clients.

Finally, a few personal biases. We personally do not believe that the cassette typewriter is a device of the future because the prices are still relatively high and having gone to the trouble of electronically capturing keystrokes it seems a terrible wasta to immediately print it on a piece of paper evan though you do have an electronic record of what it is. They are not necessarily any more natural or convenient than typing on to a television screen and you can then do the editing much more readily. What they gain in the naturalness of their initial presentation they lose in the unnaturalness of their editing procedures.

Secondly, with electronic office syatems linked to a telephone network there is very little limitation on where the equipment can be placed. Therefore it has been suggested that in the future people will work at home doing an hour or two of work and then going back to growing vegetables. This facility may work in some cases, but what we believe it will not do is replace moat people's need for a place of work. After all, we get more from work than simply performing a task and earning money. Many people will still want a place of work, to have workmates, be able to use the company's telephone or maka private photocopies or chat to the person in the canteen.

However, that is not necessarily true for everyona, and there will be some people who may well be prepared to do their work, say at home, in isolation, either because, for example, their children have to be looked after — this will apply to both males and females — and therefore the work has to be fitted round baby-sitting, or because work has become a less important part of their lives.

Another myth which we believe is untrue is that meetings will disappear. Certainly there are many cases where the provision of video or the instantaneous viewing of documents will grently extend the possibilities of existing telephona conversations. However, there is some evidence that for more delicate and complex communications, there is something about face-to-face which we think makes it an easier process which people prefer.

We also believe that the secretary in the future will become far more of an information assistant and equipment handling assistant and therefore a more equal member of the partnership.

None of these developments will occur overnight and for many years there will be varying degrees of automation in different offices.

Finally, there will be an even greater need to apply ergonomics knowledge to office system design. At presnt, people have considerable scope for adapting and modifying their immadiate working environments. If you ore trying to read a piece of paper you can move it and yourself to a place where the light is more suitable. However, with large integrated work stations with everything to hand it is essential that the design is right. Indeed, it may never be right to construct such work places. They may be acceptable in Sweden or Japan where workers can take regular breaks for gymnastics but this does not seem likely in the UK.

A certain amount of mobility not only is desirable but may be essential, provided that it is not taken to extremes, to avoid postural problems and even eye strain and headaches.

The future office work station shown in the drawing will perhaps never be built. The technology will certainly exist but the system will probably bear more resemblance to a genuine hi-fi system than to a radiogram.

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Ideally one year a programming in ASSEMBLER required by large company but programmers with COBOL wishing to learn ASSEMBLER will be considered

OPERATORS To £3,000

N. SURREY
Experienced IBM 370 operators living locally and with 'O' or 'A' levels required by large progressive company. Shift work

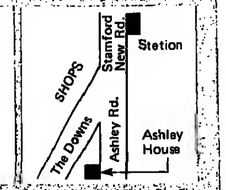
Please phone for an Application Form.

AMES PERSONNEL
TELEPHONE: 01-767 0611

ANALYSTS & PROGRAMMERS

INFORMAL OPEN EVENING IN ALTRINCHAM
Tue, Wed, Thurs; October 11, 12, 13; 6-9 pm.

Thinking of a change . . . ?
Than why not call in to discuss a very wide range of local career possibilities with Quadrent Software or through Quadrent Recruitment.
Drinks, snacks, emple car parking. It will be well worth an hour of your time.



QUADRANT COMPUTER SERVICES LTD. Ashley House
Ashley Road, Altrincham. 061-928 8302

WEST SUSSEX COUNTY COUNCIL
County Surveyor's Department

Computer Programmer— Transportation (Post 131)

Salary Scale £3,366-£4,065 + £312 + Phase 2

There are many possibilities for improving the techniques of Transportation Planning. Some of our ideas include an investigation into the use of household regression for trip generation models, and a time series analysis of traffic count data.
We are looking for somebody with an appropriate degree and experience of Fortran and IBM O/S to help us in this work and to co-ordinate the computing efforts of the engineers and technicians in the Transportation work of the County Surveyor's Department. A background in transportation planning would be beneficial, however, we would still be interested in hearing from people who are keen to broaden their experience in this field.
Phone Roger Jones on Chichester 85100, ext. 565, to find out more about the job and our extensive computing facilities.
Removal and resettlement allowances are available in approved cases plus temporary lodging allowance. Temporary accommodation may also be available.
Application forms from The County Surveyor, West Sussex County Council, Chichester, Sussex, PO19 1RH. Tel: Chichester 85100, Ext. 413/468.
Closing date: 24th October, 1977.

COMPUTER MANAGER

Salary Grade PC1 (3-7) £4662-£5577
Plus Supplements £520 Approx.

This is a challenging position for someone to play an important part in the future development of the Council's Computer facilities, which includes: *The Council's existing* tape based ICL 1901, being replaced by a mixed tape/disc configuration which is due to be completed by September, 1978.
The successful applicant should be able to demonstrate proven management ability and experience and knowledge of PLAN, COBOL and other suitable programming languages. Experience of disc and tape based systems, communications and the conversion of systems to high level languages is required.
Housing accommodation may be available in approved cases and the Council operates a resettlement and removal allowance scheme. Casual car user allowance will be paid.

Application forms are available from the Personnel and Management Services Officer, Chief Executives Department, Council House, Coton Road, Nuneaton, Warwickshire CV11 5AA. Closing date for applications 24th October, 1977.

NUNEATON

SAUDI ARABIA

Whittaker Life Sciences Group is operating a Health Services Project for the Saudi Arabian Government which includes hospitals in Jeddah, Tabuk and Khamis Mushayt. Due to the expansion of the project and the resulting requirements for additional computer systems, vacancies have recently arisen in the Jeddah Data Centre for:

Systems Analyst To U.S. $18,000 P.A. Tax Free
A minimum of two years experience on systems plus two years programming is required. Practical experience of IBM System 370 under DOS is essential and some knowledge of RPG II or BAL would be useful. The work will be initially on Supply, Finance and Employee-related systems.

RPG II Programmers To U.S. $14,000 P.A. Tax Free
A minimum of two years programming experience is required using RPG II on IBM equipment. Knowledge of DOS VSE/AVM is desirable and some experience with another programming language would be considered an advantage.

The initial contract is for a two-year period and applicants must be single or married without children. The contract includes free accommodation, six weeks vacation each year, free medical care and completion bonus of nine months salary.

The successful candidates will have the opportunity to save a considerable sum of money, whilst enjoying the outdoor activities in the sunny climate of a stable Middle Eastern country.

For further information and an application form, contact:
Whittaker Life Sciences Ltd.,
7/8 Grosvenor Street, London W1. Telephone 01-499 4695.

Whittaker Life Sciences Ltd

PROGRAMMER — APPLICATIONS PERSON

Salary range £4,500 to £5,500

A programmer — applications person is required to assist in developing, customising and installing text processing systems for the Graphic Arts industry.
The systems are based on the DEC PDP-11 series computers, and since the successful applicant will be expected to make an immediate contribution to software development, only persons of proven PAL-11 programming ability will be considered.
In addition, the person employed will occasionally be involved in the applications training of customer's personnel. Experience of computer applications, in the printing industry, or program development under DOS 10, would be an advantage.

Please telephone 01-997 8053 for further information, or send details of previous experience to:

Mike Brown
Graphic Arts Equipment (Hendrix Division)
11 Alnmee Road
Perivale
Greenford, Middx.

EVENING and WEEKEND INTERVIEWS for the following vacancies:—

APPLICATIONS and SYSTEMS PROGRAMMERS
With experience of IBM COBOL ASSEMBLER under PL/1 under DOS: OS, DICS, IMS, ALTER/DOS SHADOW CINCOM'S TOTAL RAMIS and/or RGEO1
— Inner/Greater London, Thames Valley South and West Yorkshire, Holland, Belgium, West Germany (Native language ability especially welcome)

SYSTEMS and BUSINESS ANALYSTS
with involvement in a financial, commercial or industrial environment. Candidates should preferably have had exposure to ICL 1900/IBM 370/Honeywell level 68/NCR Century machines preferably in an on-line mode.
— Inner/Greater London, East/West Sussex, Hampshire, Thames Valley East/West Midlands, Merseyside, Beds and Herts

COMMUNICATIONS/MESSAGE SWITCHING/PROCESS CONTROL SPECIALISTS
Any one computer or mainframe experience
— Inner/Greater London Thames Valley, Herts., France, Belgium, Holland, West Germany, Denmark

MICROPROCESSOR DESIGN and DEVELOPMENT ENGINEERS
with particular knowledge of Zilog Z80, Intel 8080/8085, Motorola 6800, Fairchild F100L, Texas Instruments TMS 1000/9900
— Central London, Surrey, Herts Middlesex, Hants., Manchester/Cheshire Thames Valley, Belgium, Holland

CANDIDATES who meet the above specification should telephone on Friday 7th October between the hours of 9.00 a.m. and 8.00 p.m. and on Saturday 8th October between the hours of 10.00 a.m. and 12.30 p.m. If you cannot make contact then please send a detailed résumé

MALLA TECHNICAL SOFTWARE LTD.
334 EUSTON ROAD
LONDON NW1 3BB
TEL. NO: 01-387 1042
(A division of the Malla Technical Services Group established in 1968)

CITY OF SHEFFIELD

City Treasury — Computer Services

COMPUTER OPERATORS

£1,215 - £2,853 plus 14% shift allowance (+ Phase 1 and 2 Supplements)

The Authority's computer centres on an ICL 1904S with 192K core operating under George 3 and involving extensive use of EOS 80's, magnetic tapes plus a wide range of other peripherals and terminals. Two-shift working is in operation. Operators with experience of ICL 1900 series equipment operating under George 3 are required.

Applications, giving full personal and career details, should be sent to The City Treasurer, Town Hall, Sheffield S1 1UL.

SALES EXECUTIVE

PORTABLE DATA TERMINALS
LOCATION — North of England

[illegible] INTERNATIONAL, the world's leading supplier of Portable Data Capture Equipment, is currently expanding its European operation. As part of the planned expansion we are seeking a self-motivated, experienced sales executive to be responsible for the North of England and Scotland.

The successful applicant will be based in the Manchester or Leeds area, and will have proven successful track record of systems selling to the Retail and Distribution industry.

An attractive salary commensurate with experience is offered together with a commission structure to give on-quota earnings in excess of £9,000 per annum. A company car will be provided.

Please reply, giving brief résumé of career to date, to:
Marketing Manager
MEDATA INTERNATIONAL INC.
Data House
St. Ives Road, MAIDENHEAD, Berkshire SL6 1QX

Internal Sales Engineers

Data Communications

Racal Milgo Limited, the leading supplier of DATA COMMUNICATIONS EQUIPMENT in the U.K. and Europe, have vacancies for two people (male or female) to operate in the U.K. Sales Department as Internal Sales Engineers in Reading.
As part of a highly productive and enthusiastic area team they will be responsible for internal liaison and operational functions in the interesting, commercial field of computer related equipment.
The individuals we require must have a high motivation ability as well as a certain amount of technical ability, but above all an enthusiasm which will be mirrored to our customers. They will have a real desire to progress in an active and thriving commercial environment.
They will be working with Sales Engineers who have progressed to these positions from Internal Sales Engineers and therefore the opportunity for advancement is considerable.
If you require further details of these positions, telephone our U.K. Sales Manager, Alan Gill, on Reading 85282 or alternatively write giving full details to:

V. W. Bowen,
Director of Finance and Administration,
RACAL MILGO LIMITED,
Bennet Road,
Reading, Berks.
RG2 0SS.

RACAL
The Electronics Group

ANALYST/ PROGRAMMER

NEW MALDEN
SALARY CIRCA £5,500

We are a rapidly expanding, privately owned, successful group, operating in the industrial/commercial catering industry.

A young data processing professional is required to develop, implement and operate a variety of very interesting and unusual systems on our IBM system/32.

The candidate should have had previous experience as an analyst/programmer and have a detailed working knowledge of RPGII on small IBM computers.

Familiarisation with FORTRAN would be advantageous although not essential.

VGL

Please contact:
Ken Elliott
The Venderee Group Limited
253-257 Piper House
Burlington Road, New Malden
Surrey KT3 4NG
Phone: No. 949 3477

MINI-REVOLUTION

SALES EXECUTIVE
Basic c. £6,000 + comm.

Fabulous opportunity to leap ahead by joining major UB Group marketing a much sought after Mini Computer (over 5 000 systems installed in 1976). Your market will consist mainly of OEM users who as you can derive maximum sales from bulk buying thereby yielding an income in excess of £10,000 p.a. You will need to be confident and ambitious with sales experience and living in London or Home Counties. Start basic around £8,000 + Data Centre Car. Call ref. SS1018

pa executive (KINGSTON) 01-546 9473

PROGRAMMER

We have a vacancy for a programmer to assist with the maintenance and development of systems operating on our IBM System/3. Although preference will be given to those with RPG II, experienced programmers with other languages will be considered.

The work is both interesting and challenging, and the environment friendly and professional. There is scope for personal development and the opportunity to make full use of one's abilities.

The Company is the largest independent company in the poultry production and processing industry.

The Head Office is situated in a pleasant rural area.

Application forms available from:
Group Personnel Manager
G. W. Padley Limited
Anwick, Sleaford, Lincs.

ASSISTANT EDITOR

To work on Systems International, a monthly computer magazine with offices at Upper Norwood. The job entails technical writing using knowledge of computer science, electronics, systems analysis, design engineering, software, etc., with an opportunity to learn about publishing. In the first instance apply in writing to: The Editor, Systems International, 108 Church Road, London, SE19 2UB. Tel: 01-771 3614.

Unusual Opportunity for an Agency INTERVIEWER

We are in the process of establishing a Computer Staff Recruitment Consultancy in central London. We are seeking applications for the post of Managing Director. The successful candidates will be aged between 28/40 with a background in computers and at least three years' interviewing experience in a leading Computer Staff Consultancy. Remuneration will include an excellent salary plus 50% of the business's resultant net profit and a tax-free car running allowance.

Applications should be made in writing to: John Mercer, Helmar Staff Services Limited, 77 High Street, Walton-on-Thames, Surrey. Tel. Walton (93) 40447.

Project Management in a Systems Development Environment - £6000+

Cadbury Schweppes have established a number of project teams involved with the development, implementation and maintenance of on-line computer systems using new techniques in addition to the usual batch techniques.
The increasing scope and facilities of our Bournville computer centre make the management of these teams an exceptional challenge to imaginative computer professionals.

The Manager we are looking for will be a graduate or professionally qualified specialist, aged 30+. He or she will be able to demonstrate a high degree of technical skill and experience of on-line techniques in a data processing environment. Personal qualities will include the creative thinking necessary for the design and maintenance of flexible systems that will service many users; drive, determination and a firm grasp of the necessary management skills.

Current Equipment
IBM 370-145 + 370-158 mainframes

Future Plans
2 168 main frames to support increasing CICS on-line and IMS data base demands
MVS operating system
3800 laser printer
3850 mass storage
VSPC for interactive program developments

Cadbury Schweppes

A salary in excess of £6000 p.a. is envisaged and there is a wide range of executive fringe benefits, including generous relocation expenses. Excellent career development opportunities exist within the Cadbury Schweppes Group.
Does your background and experience qualify you for this challenging and rewarding opportunity? Then telephone or write for an application form to the Company Recruitment Manager, Cadbury Schweppes (Limited), Bournville, Birmingham, B30 2LU. Telephone 021-458 7343.

(NOTE: A complimentary appointment is to be made with the emphasis on the development and implementation of financial systems. For further information please telephone)

YOUNG PROGRAMMERS

"If you are career minded read this advertisement!"

SALARY CIRCA £4,000 P.A. PLUS ABOVE AVERAGE FRINGE BENEFITS **CAMBRIDGESHIRE/NOTTINGHAMSHIRE**

Our client, a privately owned company that supports and sells an integrated series of products being amongst the most successful software products available within the United Kingdom. These products enjoy acceptance in many major mainframe installations, and are generally regarded as being the most complete and best supported in their particular application area. **INTERNAL DEVELOPMENT,** coupled with our client's **GROWTH PLANS,** has led to the necessity of recruiting further **PROGRAMMERS** who wish to develop their careers and become **KEY MEMBERS** of the company.

Interested candidates should have:

* Six months' to two years' COBOL and/or BAL and/or Plan experience gained in a formal programming environment.
* The necessary qualities and attitudes to work in close contact with clients.
* A preparedness to travel.
* The ability and desire to develop both your skills and your career.

Our client offers:—

* THE OPPORTUNITY TO BECOME INVOLVED IN SYSTEMS DEVELOPMENT AND IMPLEMENTATION
* COMPLETE AND ON-GOING TRAINING FACILITIES
* A STIMULATING WORKING ENVIRONMENT AMONGST PROFESSIONALS
* AND ABOVE ALL, PROVEN GENUINE LONG TERM CAREER PROSPECTS.

THE COMPANY OFFERS EXCELLENT (ABOVE AVERAGE) FRINGE BENEFITS INCLUDING: Interest free car loans/substantial travelling allowance/four weeks' holiday/11% non-contributory pension scheme/free BUPA/interest free personal loans/substantial relocation assistance/etc.

If you welcome the challenge in a stimulating, professional environment where your own personal development is assured then contact without delay:—

REG HEATH 021-236 3781 REF. NO. 77/0/1

SCR

OS OPERATORS REACHING FOR THE TOP

TAKE-OFF in NORTH SURREY

To £4,000

Can you honestly expect to receive planned technical training and a career path leading towards:

* Operations technical support
* User liaison and trouble-shooting
* Programming
* Junior management

That is unusual in itself!

What is more interesting is the current large 370 environment, including Time-Sharing, Real-Time and a UK network.

To qualify for this prime position, you require:

* 18 months' OS experience (knowledge of HASP would be useful).

The installation, servicing a demanding Group, "hums" with activity. Shifts are broken into small teams, and promotional opportunities are first-rate.

Rewards include: 22 days' holiday, company products discount, sports and social facilities, and a challenging future with a major UK company heavily committed to data processing.

CONTACT: LONDON OFFICE on: 01-935 0671 REF: 77/10/2

SPECIALIST COMPUTER RECRUITMENT LTD.

BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR

MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD

LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

Computing Services Association

NCR offers Systems Analysts rare opportunities in Marketing.

NCR's Commercial & Industrial Sales Division is where you'll find the scope you probably won't get if you simply stay with analysis.

Where you can use your business experience and flair for innovation to earn yourself, not only a highly competitive salary, but also, if you want it, a ticket on the route to hardware selling. Which is where the really big incomes are.

You will be involved in marketing and promotion of NCR systems for the manufacturing or distribution industries – liaising between the technical, where you've been, and sales, where you may wish to go.

To do the work, you need to have had plenty of applications experience already – preferably all the way from system conception to completion. Basic business know-how is important, and any previous marketing experience a distinct advantage.

You will be thoroughly trained. You will receive a full range of NCR company benefits. Since you will be expected to travel a fair amount, you will be paid expenses, too. But you will also be expected to live within daily commuting distance of London.

Rare opportunities. Don't miss yours.

Write to Henry Redington, Personnel Controller, NCR Limited, 206 Marylebone Road, London, NW1 6LY

NCR

KINGSTON POLYTECHNIC COMPUTER UNIT

PROGRAMMERS

I) APS/SD1 grade £3823-£4545 + £312 + stage 2 + £285 London allowance.

Applicants should have experience of applications programming in the fields of engineering and the sciences, preferably with a degree in an appropriate subject. A knowledge of the 1900 Gino-F system would be an advantage. It is intended that the person appointed will devote half the time to the supervision of documentation within the Unit.

II) AP3/4 grade £2822-£3702 + £312 supplement + stage 2 + £285 London allowance.

The programmer is required to assist in providing a service to users mainly in the fields of science and technology. Experience of graphics systems (e.g. Gino-F) an advantage and candidates should possess a degree or other qualification in a relevant subject. Knowledge of Elliott 4120 an advantage.

III) AP3/4 grade £2822-£3702 + £312 supplement + Stage 2 + £285 London allowance.

Applicants should have experience of applications programming in either engineering or commerce. For the latter, good knowledge of Cobol is required. Possession of degree or other qualification desirable. Knowledge of Elliott 4120 an advantage.

Further details and application forms from Assistant Registrar (Personnel), Kingston Polytechnic, Penrhyn Road, Kingston-upon-Thames KT1 2EE. 01-549 1366.

University of Nottingham

SAMMIE

Computer Aided Workplace Design

SAMMIE is a computer aided ergonomic design system used to design equipment and workplaces. A vacancy exists for a numerate research assistant to join the S.R.C. funded team in the Department of Production Engineering and Production Management. The successful applicant will be required to interpret and solve problems for potential users in industry and public bodies and to encourage the use of SAMMIE in new application areas. Extensive computing facilities are available. Salary in range £2,904 - £4,403.

Further details and application forms, returnable not later than 17th October, 1977, from the Staff Appointments Officer, University of Nottingham, University Park, Nottingham NG7 2RD. Ref. No. 832.

NORTH WEST THAMES REGIONAL HEALTH AUTHORITY

COMPUTER CENTRE

Colney Hatch Lane, New Southgate, London N11 3DW

The following vacancies exist, based at the Regional Computer Centre at New Southgate, for experienced computer staff to work on a variety of accounting, payroll, medical and scientific applications. The Computer Centre is equipped with a large ICL 1904S computer supported by document readers, REDIFON key to disc systems and NCR microfiche processor. In addition a wide variety of mini computers are installed in individual hospitals and laboratories around the region.

Ref. No. 194 SENIOR SYSTEMS DESIGNER/ PROGRAMMER
Salary Scale: £4,882 to £5,857

Ref. No. 195 SENIOR PROGRAMMER
Salary Scale: £4,408 to £5,218

Ref. No. 196 PROGRAMMER
Salary Scale: £3,524 to £4,408

N.B. The above salaries are inclusive of London Weighting, Stage I and Stage II awards.

The Computer Centre is a modern purpose built self contained unit standing in its own grounds. A pleasant working environment is further aided by a FLEXITIME system around a 36 hour week and adjacent canteen facilities.

Application form and job description available from the Regional Personnel Officer, North West Thames Regional Health Authority, 40 Eastbourne Terrace, London W2 3QR (Telephone No. 01-262 3011, Extension No. 281) quoting the appropriate reference number. Closing date 31st October, 1977.

SENIOR DATA CONTROL CLERK
ICL 1900 GIII Essex installation. Two years' experience. Days only position
Salary to £3300

SHIFT LEADER
Three years' experience with IBM 370/125 DOS/VS. Age immaterial. Three shift system — Surrey installation.
Salary £4300 + O/T

DATA CONTROL CLERK
Two years' experience in control shift work. Age 19-20 — City company
Salary to £3000

JUNIOR COMPUTER OPERATOR
Six months + IBM 370/DOS/GRASP/VS experience. Three shift system for SE1 company.
Salary £3000

UNIVAC 1106 OPERATORS
Four shift system preferably one year + experience on Univac, but will take any experience. W.2 installation.
Salary to £3500

ICL 1900 OPERATORS
N.W.1 installation require experienced operators for a four shift system — good promotional aspects for people with GII experience
Minimum £3000

HONEYWELL OPERATORS
One year + experience and some ICL would be preferable. Three shift system for an Essex company. (Travel allowance.)
Salary to £4000

ICL 2903 OPERATORS
NW9 installation require 2903 or 2904 experience for their two shift system. Preferably one year or more experience
Salary £3600

PHILIPS MINI OPERATOR
W.C.1 company require one year experience. Lots of client contact, days only
Salary to £3500

OPERATORS
IBM 370/OS experience for Essex installation. Two shift system, eighteen months + experience.
Salary £3000

OPERATORS
IBM 370 DOS for an East London installation. Two years' + experience for two shift system
Salary £3600

MINI COMPUTER OPERATOR
Eighteen months' + experience on any small installation for a days only position in Bucks.
Salary to £3500

COMPANIES LOOKING FOR STAFF?
Telephone Avril Livaly with details of your vacancies on:
01-402 0933

ICL OPERATOR
Two years' + experience ICL 1900 GII must have knowledge of MACRO Central London company — days only
Salary £3500

IBM OPERATOR
IBM 360/OS MVT HASP experience. Three shift system — two years' experience for Middlesex company.
Salary £3750

STAFF LOOKING FOR JOBS?
These are just a selection of our vacancies that we have available. For more details of these and many more ring Avril Livaly on
01-402 0933

AJK RECRUITMENT LIMITED (Emp. Agy.)
26 Chilworth Street, Paddington, London, W.2 **01-402 0933**

ajk

JBA

Technical Authors

West of London — up to £7000+

Our client seeks: WRITERS with several years experience in EDP ideally in a software environment; PROGRAMMERS with writing flair who want a creative satisfying job (career change); GRADUATES who may not have considered writing as a career. Ideal candidates will be highly personable and have an appreciation of real-time high level languages.

We also have vacancies in other areas offering excellent salaries and prospects.

Contact: Mike Creamer.

Software Specialists

London & Barkshire — up to £6500

One of the largest software houses in Europe has vacancies for specialists to develop new software.

The projects include work for communications, operating systems, emulators and compilers and they require professional staff with 2 or 3 years experience in one of these fields. The client can offer a challenging environment and the chance to travel.

Salaries are negotiable according to experience.

Contact: Jim Baker

Minicomputer Programmers

London & Home Counties — up to £6000

Our client, a large international organisation with several locations around London, has opportunities for programmers to work on minicomputer systems. Applicants must have at least two years experience in the development of small real-time applications, preferably with a commercial bias although technical backgrounds will be considered.

Excellent salaries and career opportunities.

Contact: Jim Baker

Programmer/Analyst

West of London – U.S.A. — up to £6000

This manufacturer of technical micro-based business systems seeks a presentable and qualified person with M/CODE and ASSEMBLER experience and a background of micro-processor (or mini) based systems, together with recent involvment of both terminal hardware and communications software. Work involves a lot of customer liaison, occasional visits to the U.S.A. and possibly, later, world travel.

Relocation assistance and excellent salary for the right person.

Contact: Mike Creamer

COBOL Programmers

London (Central) — up to £4500

Several of our clients are urgently seeking COBOL programmers, even with as little as 6 months post-training experience on any type of equipment. Positions offer excellent opportunities, variety of work, and definitive career progress to systems analysis.

Prospects, good salaries, and interesting work for competent people. Immediate interviews.

Contact: Mike Creamer

Systems Programmer

Herts — c. £5500

A well established and expanding manufacturer wishes to appoint a software programmer whose main responsibility will be for the development and enhancement of executives and telecommunications software. It is essential to have a sound academic background and have spent at least three years working in a systems programming environment. Knowledge of a communication system would be an advantage.

Relocation expenses will be paid as necessary.

Contact: Margaret Stevens

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES
International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

ata Computer Recruitment

A division of ATA Selection and Management Services, recruitment consultants to Industry and Commerce since 1962.

BRITISH AEROSPACE, RANK HOVIS McDOUGALL, VOLKSWAGEN LTD AND I.C.I. –
What do these Companies have in common?

They all use **REDIFON** COMPUTERS

These are just a few of **REDIFON**'s clients who have found that it pays to invest in the highly versatile SEECHECK and REDICHECK SYSTEMS.
They have helped to make **REDIFON** one of the fastest-growing organizations in the computer business (1000% growth in the last 5 years!)
Sales of the SEECHECK and REDICHECK SYSTEMS have broken all records this year and consequently more Territory Managers and Sales Support Personnel are required.

TERRITORY MANAGERS

c £14K p.a. + car

There are three main requirements for these positions:—

Firstly, you must know the Computer industry inside-out.

Secondly, you must be able to demonstrate that the sales track-record you have achieved over the past few years in hardware/systems has been good — very good.

Thirdly, you mustn't be scared to earn big money. Some of the Redifon sales team are earning well in excess of £14,000 p.a. this year.

Successful applicants can negotiate their own initial earnings package including salary and guaranteed commission; choose from a range of new Cortina 1600Ls or run their own car (for which they are very well compensated); and benefit from a personally tailored training scheme.

SALES SUPPORT PERSONNEL

£4K-£5.5K + Car

The versatility of Redifon's range of equipment means that their team of Systems Analysts, whose job is to dovetail the installation of comprehensive systems into clients' existing commercial operations are faced with new and varied challenges.

Whether it's a small machine installation for a Bureau or a multi-terminal site with a mainframe interface for Sales, Distribution and Accountancy data generation the pre- and post-sales support function is vital.

Ideally you'll be an experienced Systems Analyst, probably a graduate, and possess the creative flair and sales diplomacy to act as a client consultant on Redifon's behalf.

REDIFON's expansion plans embrace the whole of England and Scotland. Applicants of either sex are invited to contact their nearest branch of ATA COMPUTER RECRUITMENT to discuss these positions in more detail.

LONDON (01) 637 0781 — 230 Gt. Portland St., W1N 5HG
MANCHESTER (061) 832 5857 — 86 Cross St., M2 4LA
BIRMINGHAM (021) 643 1994 — Woolworth Building, 102 New St., B2 4HQ
BRISTOL (0272) 211035 — Equity and Law Building, 36-38 Baldwin St., BS1 1NR
EDINBURGH (031) 226 5381 — Anglia House, 24-26 Frederick St., EH2 2JR
CRAWLEY (0293) 514071 — 36 The Broadway.

Systems Engineer/ Computer Programmer

HAWKER SIDDELEY AVIATION

Based in our Avionics Department at Dunsfold Aerodrome, the successful man or women will be required to develop software concerned with real-time flight simulation and on-line equipment control.

Ideally, you will be qualified to degree standard and have experience with PDP 11 using FORTRAN and ASSEMBLER under the RSX-11D Operating System..

We will pay you a good salary and facilities include a Pension and Life Assurance Scheme, a subsidised canteen and an active Sports and Social Club.

Please write or telephone quoting CW/7B to:

The Personnel Officer
Hawker Siddeley Aviation Limited
Dunsfold Aerodrome
Nr. Godalming
Surrey
Telephone: Cranleigh 2121

A BRITISH AEROSPACE COMPANY

HOLLAND:

Professional Programmers, Operators and Punch Girls required for lucrative contracts in the Amsterdam area. Details and C.V., plus phone no. if possible, to:

OVABOND LTD.
Weteringstraat, 29
Centruum, Amsterdam

Cobol Programming B3700

Woking

Our B3700 at Woking is linked with TC 3500 remote computers at our factories in Liverpool and Southampton and is used for a wide variety of applications. The expanding demand for our services means that we are looking for experienced people to join our team. The Management Services Department is responsible for O & M and Operational Research as well as computing, and there are opportunities to progress to the Business Analyst field. The Company is the UK arm of the B.A.T Group's tobacco interests and has a large and growing export business; we market tobacco products in 160 countries.

Applicants should have around 2 years COBOL programming experience, not necessarily with Burroughs equipment.

Salary circa £4,500; assistance will be given with re-location expenses.

To apply, please send details to:—

O. J. Smith,
B.A.T (U.K. and Export) Limited,
Export House,
Woking, Surrey, GU21 1YS.

or, if you wish to discuss the position, telephone WOKING (048-62) 75111 and ask for Keith Soden-Barton or Sian Strangwick.

B·A·T

FREELANCE PROGRAMMERS

Germany	£300+ p.w.	ICL 1900/2903 COBOL
South London	c £200 p.w.	PDP-11 CORAL (Nov. start)
London (all areas)	c £180 p.w.	BURROUGHS COBOL
Central London	c £180 p.w.	ICL 1900 COBOL Team Leader
Surrey	c £180 p.w.	IBM COBOL/BAL
Surrey	c £180 p.w.	ICL System 4 User Code
North London	c £180 p.w.	RPG II (any machine)
Berks.	c £160 p.w.	RPG II PROGRAMMER
Berks.	c £190 p.w.	RPG II ANALYST

For further details:

Telephone Les King up to 8 p.m. each evening or write to Modem Computer Services Ltd FREEPOST London SW11 6BR 01-228 2283

MODEM
Computer Services Limited

SENIOR ANALYST — c. £5,000
ANALYST PROGRAMMER — c. £4,300
PROGRAMMER — c. £3,800

SOUTH LONDON

Pye Records (Sales) Ltd., a subsidiary of the A.T.V. Corporation now offer 3 outstanding opportunities to join a small enthusiastic team working on REAL-TIME DATABASE Systems in the Music Industry

Our expanding applications currently use a PDP 11/45 under Mumps-11 for on-line order-processing and stock control through 32 local VDU's. The accounting systems are written in Mumps, RPG2 and Assembler.

We require high-calibre, self-motivated professionals, offering at least 2 years sound commercial experience and eager to develop their careers in a growth area of the computer industry.

The senior position demands 4 years' systems experience, including working with on-line systems, and the ability to exercise team-leadership skills.

If your experience and ability qualify you for one of these positions, telephone now for an application form, or send your cv in complete confidence to:

L.W. Tibball – Personnel Manager,
PYE RECORDS (SALES) LTD,
132 Western Road,
Mitcham, Surrey CR4 3UT
Tel: 01-648 7000

PYE RECORDS

ab

YES, there are over 40 vacancies with our clients all of whom are dynamic and progressive organisations, capitalising on the improving economic situation today. The positions are challenging and the equipment in use is varied.

Excellent salaries complemented by big company benefits and relocation expenses where applicable make for a most attractive package. If you are looking for a real career opportunity, pick up the phone NOW and find out more.

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Bristol (0272) 46085

Geophysical Data Processors Libya

AGECO is a national oil company operating in the Socialist Peoples Libyan Arab Jamahirya. We are primarily engaged in oil production from finding new sources to pumping the crude to local users and termini, and have a daily output of nearly half a million barrels.

At present we are putting together a team of geophysical data processors, to be based at our head office in Benghazi, who are familiar with *Command II or Phoenix system and routine*. We invite applications for the following positions.

Senior Seismic Data Analyst

Applicants should have a University degree or equivalent with at least five years experience in field operations and an understanding of the principles of seismic interpretation. Job ref. No. GP/B1.

Seismic Data Analyst

As with the senior position, applicants should have a degree and a thorough knowledge of seismic work, but only three years experience are necessary. Job ref. No. GP/B2.

Seismic Computer Operator

You will be required to assist analysts in assembling data and will, on occasions, be given the responsibility of running various programmes. Applicants should have had two years relevant experience. Job ref. No. GP/B3.

All these bachelor posts carry extremely high salaries on which you are allowed to remit some 90% of the net. The successful candidates will be required to work on the basis of one week off for every seven full weeks work, with the company paying the return air-fare to the UK at each field break. There are numerous other very attractive fringe benefits.

Please write, quoting job reference number giving details of age, nationality, marital status and a brief résumé of career to:

AGECO

The Arabian Gulf Exploration Company (UK), 35-38 Portman Square, London W1H 9FH.

COBOL PROGRAMMERS

SURREY — **to £5000+ + + +**

Commercial Union has recently installed its second 370/148 and needs to expand its team of young, lively programmers at the modern spacious offices in Whyteleafe (near Croydon).

If you have two or more years Cobol, there could be a place for you. Assembler, TP and Database experience would be helpful although training will be given.

Salaries are up to £5000 plus house-purchase loans at preferential rates after a qualifying period, in approved cases.

Career prospects are excellent, and additional benefits include flexitime, free lunches, generous discounts on all insurances and much, much more.

Interested? Contact Geoff Mackenzie, Computer Appointments, 54/62 Regent Street, London, W.1 or telephone 01-439 6299.

Computer Appointments Register

Computer Personnel International

110 St. Martin's Lane, London WC2N 4BH
Telephone: 01-836 6775

OPERATORS
SHIFT LEADERS
DATA CONTROLLERS

I have lots of extremely interesting jobs on file for Operations Staff from Trainee Operator to Operations Manager. If you are contemplating a change why not ring me — I may have the perfect job for you.

Particularly urgent are the following:

OP IBM	W/End	to £3500
OP ICC (or large M/Frame)	Berks	to £3500
OP IBM	Herts	to £4100
DATA CONTROL	Central London	to £3000
OP UNIVAC (or large M/Frame)	London	to £3800
OP PDP pref.	London	to £3500

Contact: MARILYN DAVIDSON

SKILLTRAIN TO THE USA

London Interviews: October 17th

Our clients from Connecticut are coming to London to recruit a team of D.P. professionals on a contract basis.

If, as an Analyst/Programmer, you can provide experience of O.S. Cobol acquired on large-scale projects in a manufacturing environment, we would be pleased to provide the ticket end an excellent salary package. The company is heavily involved in the use of database techniques, so expertise in this area would be an advantage; however, this is not essential.

To arrange an interview with our clients,

Contact: LINDA BENSTED

JUDGE WANTED

To be trained as a Personnel Consultant. Female or male, but must be a good judge of people — their technical skills and personal characteristics.

A systems or programming background is desirable but most important is your perception, communication, ability, initiative and ambition.

Promotion of existing personnel to our New York office creates this vacancy.

If you are interested in this position and would like to discuss it further,

Contact: MARILYN DAVIDSON

Real Time People — Computing Services Association — Computer Room People

WEST COUNTRY PROGRAMMERS

C. £4K + Asst. House Purchase

An exciting expansion and development programme has created three additional vacancies within a major financial institution located in the glorious West Country. A branch terminal network; database implementation; extension of local TP, are the three development areas.

Experience of PL/I is preferable but Cobol and/or an Assembler would also be acceptable.

This very attractive package includes a realistic salary, assistance with house purchase, BUPA group scheme, pension, life assurance, etc.

For an early interview urgently phone AB Executive on 0272 45085.

ab executive (Bristol)

RPG II PROGRAMMER

We currently operate an IBM system 3/12, applications cover marketing, manufacturing and finance, on-line systems are now being developed. Applicants should have 1-2 years' RPG II experience preferably on system 3. A knowledge of Bomp and CCP is desirable but not essential as relevant training will be provided. Write or telephone for an application form.

Personnel Manager
BRITISH TWIN DISC LTD.
Knight Road, Strood, Rochester, Kent
Telephone: Medway (0634) 77865

Faculty of Business (Barking Precinct)
Department of Systems & Computing Studies

Lecturer II Appointment

Applicants for this post should have recent commercial, industrial or teaching experience from among the areas of information systems, database technology and operating systems. Appropriate academic qualifications required and experience of ICL 1900 series would be an advantage. (Ref. S/SE 121).

Salary Scale: Lecturer II £3,279 - £5,493

(Plus appropriate Government Supplements of up to a maximum of £492 and appropriate London Allowance).

Further details and Application Form from
The Senior Staffing Officer (2)
North East London Polytechnic
Forest Road, London E17 4JB
Telephone: 01-527 2272 (Extension 20)

Closing date: 17th October, 1977.

NELP North East London Polytechnic

IRELAND

SYSTEMS ANALYST/ DPM DESIGNATE

We are an International Pharmaceutical Company and have recently installed an ICL 2903.

We wish to appoint a Systems Analyst with considerable experience in the design and implementation of commercial systems, to develop and run our existing DP Department. It is envisaged that the suitable candidate will become Data Processing Manager within a short period of time.
An attractive salary will be offered and the Company operates a non-contributory Pension and Life Assurance Scheme. Relocation expenses will be paid where appropriate.
Please write with full career details to:

The Financial Controller
ANTIGEN LIMITED
Roscrea, Co. Tipperary

LONDON BOROUGH OF BARKING

BOROUGH TREASURER'S DEPARTMENT

Computer Manager

PO 1(C)

(Male/Female)
Salary £6003-£6864 inclusive
plus earnings related Supplement

Applications are invited from suitably experienced persons able to communicate and motivate staff. The Council has an IBM 370/125 computer with 2 disc drives and 2 tape drives using RPG, and the ability to make full use of this installation together with the development and implementation of new systems and procedures is required.
Application forms from Borough Treasurer, Civic Centre, Dagenham, Essex. Telephone: 01-592 4500.
Closing date 28th October, 1977.

UNIVERSITY OF NOTTINGHAM
CRIPPS COMPUTING CENTRE

NUMERICAL METHODS SPECIALIST

A specialist in numerical methods is required to join an existing team whose responsibilities include liaison with research workers in the University, and the provision of an advanced numerical and statistical facilities on the Centre's linked ICL 1903T and 1906A system.

The team also liaises closely with similar teams in other universities and contributes to the NAG library. Experience of scientific programming languages, preferably Algol or Fortran, is required.

Salary up to £4190 per annum. Further details and application forms obtainable not later than 17th October, 1977, from the Staff Appointments Officer, University of Nottingham, University Park, Nottingham NG7 2RD. Ref. No. 531.

COUNTY TREASURER'S DEPARTMENT
Computer Services Division

Systems Analyst

GRADE AP4/5. £3861-£4615 inclusive of supplements
POST REF. T249

Applications are invited from persons with at least twelve months' experience of systems analysis, or from experienced programmers with local government or commercial backgrounds and experience of the systems environment.

The successful applicant may expect to be employed upon a wide range of applications, on some occasions working as a member of a team and on others in a more individual capacity. He/she must, therefore, be capable of negotiating with the representatives of user departments at all levels and of being responsible for a development from investigation through to implementation.

Closing date 22nd October, 1977.

Senior Software Programmer

GRADE SO1/2. £4239-£4992 plus up to £520 p.a. supplements.
POST REF. T275

Applications are invited from suitably experienced persons, who must have a good knowledge of the operating system and other standard ICL issued software. The successful applicant will lead a small team of specialists, who are responsible for all system software, including Communications Manager and Datadrive.

Closing date 16th October, 1977.

The County Council, situated at Barnsley, has a 182K ICL 1904S computer running under the George III Operating System, and supporting an extensive MOP and communications network, which includes a Direct Data Entry/Enquiry System.

Current applications range from conventional batch to real time systems and developments involving integrated database techniques are envisaged in the near future.

Please — telephone or write for an application form, quoting the post reference to Chief Executive (Personnel), South Yorkshire County Council, County Hall, Barnsley S70 2TN, telephone Barnsley 86141, Ext. 266.

South Yorkshire County Council
ENERGY IN ACTION

want a tip?

here's what we want...

It's quite a task to co-ordinate and cope with the requirements of our retail branches, over 390 of them throughout the country. Our task is to distribute over 7 million items of merchandising annually—including books, stationery, toys, greetings cards etc. Swindon is our nerve centre; here our computers help us to provide the high-speed efficiency required for retailing at its most sophisticated.

Based on a large ICL 2970, two 1904's and a new planned distributed network of 2903's and 1500's, the Management Services Department of W.H.Smith and Son Ltd., are looking for additional staff at all levels to work on a number of interesting projects including a major distributed network and TP systems.

We are looking for experienced

SYSTEMS PROGRAMMERS
SYSTEMS DESIGNERS
BUSINESS ANALYSTS
PROGRAMMERS

who are prepared to make a major contribution within this challenging field of work. In some instances, traineeships will also be available. We have openings for people with all grades of experience to whom we will pay realistic salaries of up to £5,787 p.a.

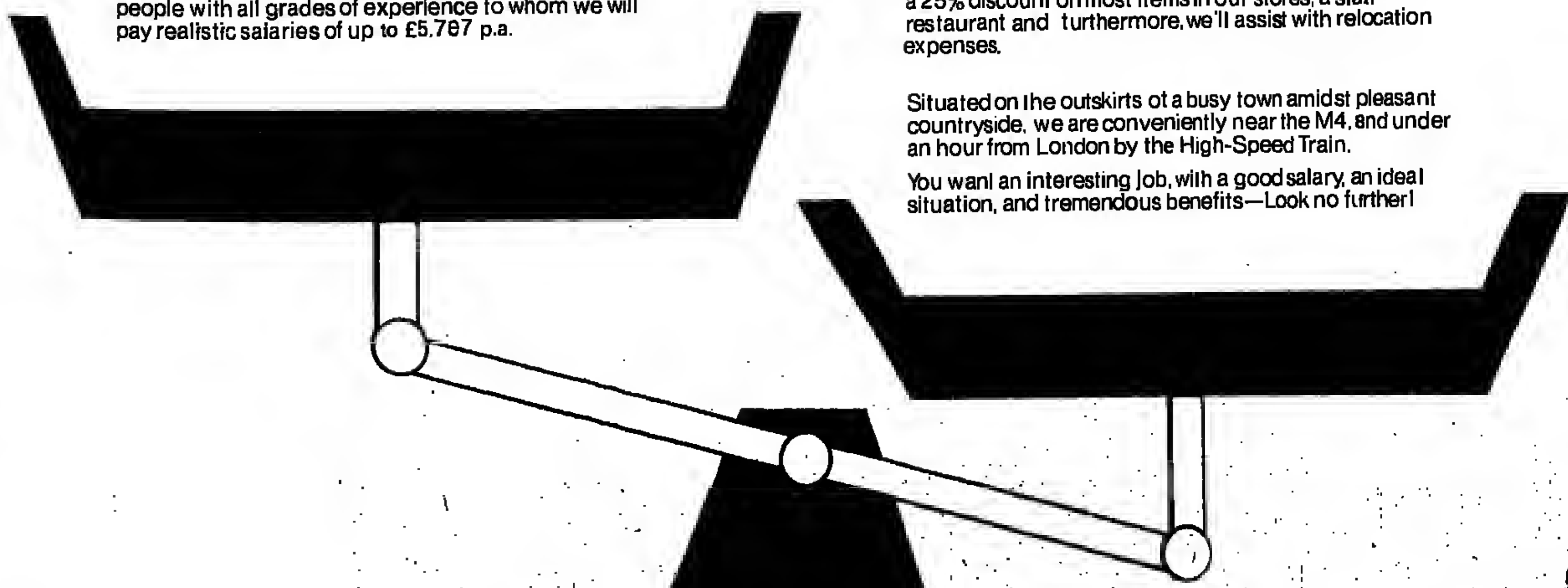
here's what you want...

Firstly of course, you want adequate reward for your labour. By that you don't just mean a good salary, but "all the benefits associated with a large and progressive company." What does that phrase mean? Is it just pension and sick pay schemes and four weeks annual holiday? You'll get all that of course, but we go far beyond that:— because we're asking you to work with computers doesn't mean that we'll treat you like one.

W.H.Smith and Son have built up a reputation for believing that people matter, and that's not just idle talk. We don't consider that because you may be the newest recruit, you're the least important. We're offering secure jobs with almost unrivalled benefits. You'll be entitled to a 25% discount on most items in our stores, a staff restaurant and furthermore, we'll assist with relocation expenses.

Situated on the outskirts of a busy town amidst pleasant countryside, we are conveniently near the M4, and under an hour from London by the High-Speed Train.

You want an interesting job, with a good salary, an ideal situation, and tremendous benefits—Look no further!



tip the balance in your favour...

For further details and application form please contact:-
The Senior Personnel Officer, W.H. Smith & Son Limited, Greenbridge Road, SWINDON, Wilts. SN3 3LD or telephone Swindon (0793) 36271. Extension 381 or 325.

WHSMITH

LEICESTER SYSTEMS MANAGER

SALARY £5'000 to £6'000 pa. PLUS £1'000 pa. TAX FREE CAR ALLOWANCE

We are to recruit a Systems Manager for a well-established and respected Computer Services Company, to work at a senior level and provide a comprehensive interface with our client's customers, to cover all major aspects of systems implementation.

CANDIDATES SHOULD HAVE:—

* In-depth experience of accounting procedures.
* Ideally an accounting qualification.
* Some experience of computing techniques, gained either within a formal data processing systems department or as a user.
* The capability of presenting him/herself in a business-like manner.
* A desire to be successful, and to be suitably rewarded for your efforts.

This is an attractive and well-paid post with a professional and dynamic privately owned Computer Services Company, with further considerable opportunity for real career progression.

Interested candidates should contact without delay:—

REG HEATH 021-236 3781 REF NO 77/0/3

SYSTEMS ANALYSTS

COMMUNICATIONS DEVELOPMENT IS THE NAME OF THE GAME

North London **To £6'000**

You could do a lot worse at this stage in your career than to be involved with on-line development in an ICL environment which includes DRIVER and Communications-Manager.

Combine this with

* A flexible Project Team structure.
* Development of a wide range of commercial systems.
* Encouragement to contribute to the total project.
* Early career progression to a Senior level.

and a highly challenging situation presents itself.

The main quality demanded can be summed up in one word — POTENTIAL — added to which your experience should include:—

* 3 years' Systems Analysis
* A sound technical background

If scope for initiative and a results-geared environment sounds a future you would demand . . . you've found it.

Contact: London Office on 01-935 0671

Ref. 77/10/4

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BIRMINGHAM 021-236 3781 FREEPOST
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MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 3BD
LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

SCR

Computing Services Association

Minicomputer Programmers

Linotype-Paul is a world leader in the design and manufacture of computerised phototypesetting systems which incorporate a high level of technical innovation and complex software. The Company has an outstanding record of growth and export.

A policy of continuing expansion has led to a requirement for additional programmers to work in our software department.

The function will involve the specification and writing of software for new projects on real-time minicomputer applications.

Candidates should have around 2 years experience in assembler level programming and be educated to degree level in Maths, Physics or Computer Sciences.

An attractive salary and benefits will be offered and will include assistance with relocation where appropriate.

Please apply enclosing details to: The Personnel Manager, Linotype-Paul Limited, Lansdown Industrial Est., Cheltenham, Glos. Tel. 39881.

Linotype Paul

Computor Operations

We are a successful and well established remote access and timesharing bureau, with a large country wide network, and an overseas operation. We require Operators and Data Controllers at various levels to work with advanced equipment in our modern computer operations centre at Epsom.

We offer appropriate training and advancement to shift leader grades for those who possess the relevant experience, are willing to accept increased responsibility and have the urge to progress through the Company.

We offer the employee benefits associated with a leading professional organisation including staff bar and restaurant and sports and social club facilities.

Interested? Then write giving brief personal and career details to Mike Warren, Senior Personnel Officer, Atkins Computing Services Limited, Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW or telephone Epsom 26140, extension 2444.

Atkins Planning

The Performing Right Society Ltd.
(an association of composers, authors and publishers of music)
is looking for a

PROGRAMMING CONSULTANT

Salary around £5000
according to age and experience

Extensive PLAN and disc experience and also a working knowledge of ICL COBOL. The successful applicant will have successfully participated in at least one major system.

4 weeks' holiday p.a., 75p LV's per week, staff restaurant, 35-hour week, but start and finish times are flexible, bonus scheme, excellent mortgage assistance scheme after 2 years' service.

Please telephone Personnel 01-580 5544 or write, giving qualifications and experience, to:

The Personnel Manager
Performing Right Society Ltd.
29-33 Berners Street, London, W.1

PROGRAMMER

IBM 360/50

Required to work on the Continent for up to one year and to join an existing team developing ATC simulation facilities. Must be proficient in programming in PL1 and Assembler languages. Working knowledge of a European language is also desirable. Salary from £4,000 per annum by negotiation plus expenses in the region of £7,000-£7,500 per annum overseas allowance.

Please apply in writing to:

EWS Technivision Limited
126-127 Promenade, Cheltenham, Glos.

CAPITAL APPTS.
FORTRAN
Experienced and Trainee Programmers
urgently required for industrial and scientific development.
£3000-£5500
ALL AREAS
Phone for free list of vacancies
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COBOL CONTRACTS IBM OR ICL
UK & EUROPE
RING PENNY
01-402 9355

UNIVERSITY OF LIVERPOOL
ADMINISTRATIVE COMPUTER UNIT

ANALYST/PROGRAMMER

Applications are invited from suitably experienced candidates (male/female) He or she will be involved in the maintenance of existing administrative and financial applications and the development of new applications in these areas. The computer is an ICL 1902A. Applicants should have at least two years' experience of COBOL, preferably on a 1900 series machine with knowledge of discs being an added advantage.

Salary will be in the range to £4,703 per annum according to qualifications and experience.

Further particulars and an application form may be obtained from the Registrar, The University, P.O. Box 147, Liverpool L69 3BX. Quote ref: RV/673/CW.

COPE ALLMAN
INTERNATIONAL LTD.
LEISURE DIVISION
NOTTINGHAM

PROJECT LEADERS

We are looking for experienced computer professionals to implement the necessary accounting and manufacturing systems associated with a complex manufacturing company.

A strong background in the relevant commercial systems is required together with a knowledge of RPG II and/or COBOL. The right person will be able to demonstrate six years' computer experience, and the ability to communicate with all management is mandatory.

Salary is dependent on experience and all the usual benefits associated with a large group are available.

Please apply giving curriculum vitae to:

J. B. Clayton
Head of Management Services
Cope Allman International Ltd.
Leen Gate, Lenton, Nottingham

EUROPE'S LEADING SPECIALIST RECRUITMENT CONSULTANTS

DISTRIBUTED PROCESSING CONSULTANT

an opportunity to develop expertise in advanced distributed processing development

WEST LONDON to £6,600 p.a.

THE COMPANY: A secure and profitable international group.

COMPUTER FACILITIES: A large IBM 370, which provides interactive services to a number of locations. These include IMS/DC, TSO and APL.

PLANNED DEVELOPMENT: Some distributed processing experience has been gained, as a result of which a major distributed processing network incorporating a number of minicomputers and employing distributed database management is now planned.

DISTRIBUTED PROCESSING CONSULTANT: The person appointed will have the opportunity to contribute to the establishment of distributed processing strategy and to be involved from an early stage in the development and implementation of the corresponding proposals. He or she will work initially with consultants and will have contacts with appropriate parts of the group, both U.K. and overseas.

Initial tasks will include participation in the evaluation of alternative equipment, liaison with systems programmers on planning and implementation probably of SNA, and contributing to distributed processing standards.

SUITABLE CANDIDATES: May come from a variety of backgrounds and it is not expected that any individual will have all the desirable skills and experience. A keenness to acquire new skills is therefore essential, as are a sound technical background, high interest in distributed processing and the ability to communicate effectively with all types of D.P. staff.

Experience of data communications and/or minis is desirable, perhaps gained in the capacity of systems programmer or by someone working with systems programmers on a minicomputer implementation project.

IF YOU ARE ATTRACTED BY THIS OPPORTUNITY AND CONSIDER YOU COULD FIT THE SPECIFICATION, WE WOULD BE PLEASED TO HEAR FROM YOU, QUOTING REF. CW915.

DP SC

Crown House Morden London SM4 5EU
consultancy division
01-540 8311
24-hour answering service

COMBYTE

IT'S NOT WHAT YOU KNOW, IT'S WHO YOU KNOW . . .

and in this business, we know a lot of people: users, consultancies, bureaux — in fact, companies from all areas of industry are asking us for experienced personnel at all levels. With our contacts we can put you in touch with the right people regarding the job you're looking for. And at the moment, our clients are seeking more people than ever before. We could fill this whole space with brief, one-line space; but rather than do that, we have briefly detailed a sample selection below. But remember, we have many, many more jobs than advertised here, in many different locations. So, you could take a lot of the hard work out of job hunting by giving us a call.

BUCKS.

A small but very well known company located in a pleasant rural area currently runs 370 DOS/VS. They need an ANALYST/PROGRAMMER with 2 years' COBOL or RPGII and 18 months' commercial systems design. Work involves design and programming straightforward commercial systems. Salary is in a range up to £4500 p.a.

LONDON

A Honeywell user, international and very large in its field, has an installation in the West End. They are able to offer to an ANALYST/PROGRAMMER the chance of developing further into systems with the eventual aim of becoming a pure analyst in the short term. You will need to know COBOL, although the prime requirement is systems experience. The job entails development of new commercial systems with a small amount of maintenance. Salary is up to £4500 p.a.

WEST ESSEX

COBOL PROGRAMMERS and ANALYSTS are sought by this company currently in the process of changing hardware. Systems are presently being developed for the latest type of Honeywell machine and useful experience can be gained. PROGRAMMERS are welcome with 12 months or more on any COBOL, and ANALYSTS should have 3 years' commercial systems design. Salaries are very good — up to £5000 for Programmers and to £6000 for Analysts.

CONTRACTORS

We have a fairly continuous requirement for experienced freelance PROGRAMMERS and OPERATORS. If you are currently free, or will be so shortly, please phone us for further information.

ESSEX

We have a company situated in NE Essex who have requirements for a variety of people. They are using a large IBM OS configuration running both batch and TP applications and can offer a valuable experience in various fields. On the PROGRAMMING side, they would like us to find Programmers with 1 year or more in an IBM-type Assembler or PL/1. Assembler people will be given the opportunity of learning PL/1 or perhaps joining a software group at a later stage. Opportunities to diversify are really good. They also need experienced ANALYSTS with 3 years' commercial systems design, and ideally some IBM knowledge. If you have experience of financial-type applications, so much the better. In addition to an attractive salary, the offices are new and in a pleasant part of the countryside.

SURREY

A small consultancy with an extensive workload needs capable RPGII PROGRAMMERS who enjoy the non-routine and well-rewarded life consultance has to offer. There are also vacancies for IBM COBOL people. Variety of work, salary to £6000 p.a. and a COMPANY CAR after a suitable period make this an attractive proposition.

CLIENTS

If you're having difficulty in finding people, remember the answer to a lot of your problems could be as far away as your telephone.

Contact Danny Boreham or Phyllis Irwin on 01-240 3223, or write to them at
COMBYTE, SUITE 74/76, 12/13 HENRIETTA STREET, LONDON WC2E 8LH
Employment Agency License No. SEA2648

USA SYSTEMS ANALYSTS & ANALYST PROGRAMMERS

—360/370 COBOL or similar background

Exciting opportunity to spend 1-2 years in America with the technical staff of BLUE CROSS BLUE SHIELD. Relocation expenses and round-trip air fare paid.

We are the largest U.S. Health Insurance Organisation, and we have dual 370/168's with 450 on-line CRTs. We are involved in an array of sophisticated real-time applications, assuring you of excellent experience and training during your stay with us. We offer competitive salaries based on U.S. rates.

To schedule a confidential interview with our senior management, telephone 9.00-6.00 including weekend, reverse charges accepted, or write immediately to our representative M. STARR, ROYAL LANCASTER HOTEL, LANCASTER TERRACE, LONDON, W2 2TY, 01-262 6737.

LONDON INTERVIEWS OCTOBER 10-13
Expenses reimbursed

MYRIAD OPERATIONS
Computer Personnel Consultants

OPERATOR

N. LONDON **To £3500**

A major manufacturing and marketing organisation is currently seeking to recruit an additional operator for its small yet sophisticated computer centre. A variety of main-frame applications are processed revolving around a mini-based communications network.

You should be able to offer eighteen months' experience on any machine, and be capable of demonstrating considerable initiative since you will be required to work with a minimum of supervision.

In any period of three weeks you will work two day shifts and one evening shift, covering the hours between 9 a.m. and midnight. In addition to the commencing salary a comprehensive range of fringe benefits will be offered, including a staff restaurant and a company product discount purchase scheme.

This is an excellent opportunity for you to progress and join a close-knit team in a small, efficient installation.

Please telephone for a confidential discussion or write:
30 Fleet Street London EC4Y IAA
01-353 5868

Senior Programmer -Team Leader

If you are a senior programmer or an experienced programmer, and are ready to add team leadership to your career development, then you could be the person that we are seeking.

The team is at present engaged in developing a new pharmaceutical costing and production system using COBOL and I.B.M. equipment. Within our progressive computer department you would be working directly under the Project Leader at Beeston.

This unique appointment requires a person with wide programming experience and the ambition to develop supervisory management skills.

The position offers a salary to match the responsibility and a range of benefits including a contributory pension scheme, profit sharing scheme, staff discount facilities and assistance with relocation expenses where appropriate.

Ready for a position like this? Then please write for an application form to: J. Hallam, Employment Manager (Commercial),

Boots

The Boots Company Ltd.,
Head Office, Beeston, Nottingham, NG2 3AA.

BAXTERS Family Butchers

SYSTEMS PROGRAMMING SUPERVISOR
Northampton

The company is a member of the Brooke Bond Liebig Group and the position is at its head office in Northampton.

The Supervisor will be responsible for the operation of the company's new IBM Systems 3 installation and will report direct to the Chief Accountant. Several years' commercial experience and a good knowledge of RPG II is essential

The person appointed will be the Senior Computer Specialist in the company, and will have ample opportunity to try out new ideas in this expanding field in the company's operations.

The position will be attractive to anyone qualified who is currently earning about £4,400 p.a. and is looking for an opportunity to step out into a new environment and run his/her own show

The position offers attractive fringe benefits including membership of the Brooke Bond Liebig Pension Scheme. If necessary, some assistance with removal expenses will be available

Applicants should please send a detailed career history to **Mr. S. Bevan, A.C.A., Chief Accountant, Baxters (Butchers) Ltd., Albion House, Victoria Promenade, Northampton NN1 1HB.**

SELECT A JOB!

These vacancies are a very small selection from those held on-line in our computer:

£5,700	S/A (PL/1 & ASSEMBLER)	London EC
£6,500	PROJECT LEADER (S/A)	Hayes
£6,000	MPU Development Engineer	Reading
£7,000 + car	SYSTEMS ENGINEER	Berks
£5,000 + comm. + car	SALES	BE/Midlands

Call us in confidence for details and interview

COMPUTECH SYSTEMS & PERSONNEL
168 Finchley Road, London, NW3 6HP

DERRITRON ELECTRONICS LIMITED

the Hastings based leading European designer and manufacturer of electro magnetic vibration testing systems is enlarging its computer science section and has a vacancy for a

MINI-COMPUTER PROGRAMMER

The person will design, write and document specific programs for real time signal analysis and control systems.

He or she must have a minimum of 12 months' experience of assembly code programming, with a degree in a numerate science. The ideal person will be self-motivated with a practical approach to problem solving.

A commencing salary of £4,500 is envisaged. Fringe benefits include contributory pension scheme and 4 weeks' holiday

Write enclosing brief career and academic details to

Personnel Manager
DERRITRON ELECTRONICS LIMITED
Sedlescombe Road North
HASTINGS
East Sussex, TN34 3XB

DATA 100 TERMINAL OPERATOR

Bechtel, a major international engineering and contracting company, makes extensive use of DP techniques throughout its operations and now wishes to appoint an experienced Terminal Operator, men or women, at its Hammersmith Headquarters.

Work will include the operation of a Data 100 terminal serving both IBM and Univac miniframes and applicants should have at least two years' relevant commercial data processing experience. A Harris 1600 terminal has recently been installed and the successful applicant will be expected, eventually, to move on to this machine.

Alternate shift working will be called for: 8 am - 4.15 p.m. and 10 am - 6.15 pm.

Salary circa £3500 - £4000 per annum plus an attractive range of benefits including 50p LV's and paid overtime.

Write in confidence, giving full details of qualifications and experience, to Pippa Lindsay, Bechtel International Limited, Bechtel House, 245 Hammersmith Road, London, W6 8DP. Telephone 01-741 6094.

HERTFORDSHIRE COUNTY COUNCIL
COBOL PROGRAMMERS
AP. 2/4: £2661-£4134 p.a. Plus Phase II

Vacancies exist in the Planning and Finance Departments for experienced Programmers to work in the data processing development teams. An NCR Century 251 Computer is currently installed, running under the B4 multi-programming operator system, with the next equipment upgrade planned to take place in the coming year.

A wide range of applications are in use, serving the needs of most Departments within the County Council and the schedule of new development looks towards the further growth of on-line and information systems work including subjects such as population, employment and land availability.

Candidate should have had two years successful programming experience, preferably in NCR COBOL.

APPLICATION FORMS from County Planning Officer, County Hall, Hertford (Hertford 54242 — Ext 5173) returnable by 17th October, 1977.

UNIVERSITY OF LONDON COMPUTER CENTRE
A vacancy exists in the NETWORK CONTROL Section

The Centre operates a multi-mainframe computer service for both London and South East Universities with a large telecommunications network providing access for both batch and interactive terminals. An assistant is required to join a small team supporting this network, inc. diagnosing hardware problems, etc. Two-shift working is involved.

Applicants should ideally have some relevant data communications or operating experience, although a trainee will be considered. Starting salary in the range £3,112-£3,880 inc. Applications, stating age, qualifications and experience, should be addressed to Mr. L. Tweed, ULCC, 20 Guildford Street WC1N 1DZ.

LEEDS CITY COUNCIL DEPARTMENT OF EDUCATION
Kitson College of Technology
Cookridge Street, Leeds LS2 8BL
Tel. Leeds 30381

Applications are invited from suitably qualified teachers for immediate appointment or from January 1978, as

LECTURER Grade 1
DEPARTMENT OF SCIENCE & MATHEMATICS

To teach C.O.L.I Computer Programming and Computer Science 'A' Level courses. Graduate with experience in COBOL essential teacher's certificate desirable.

Details and forms of application from the Principal of the College to be returned in 10 days

we want to see

OPERATIONS STAFF . . . at most levels, particularly with IBM or ICL Hardware.

SENIOR PROGRAMMERS & PROGRAMMERS . . . with a minimum of 2 years experience.

SYSTEMS ANALYSTS/DESIGNERS . . . with minimum of 3 years experience of both minis and main frames at all levels.

EVERYTHING TO GAIN NOTHING TO LOSE*

KBS Computer Services are looking for top quality personnel to fill vacancies in various parts of the country.
We are constantly expanding our placement lists, for further information complete the coupon (NO STAMP NEEDED) and leave the rest to us.
* not even the cost of the stamp!

To: KBS Computer Services, FREEPOST, Liverpool LV4436

Name
Address
Position
Experience
Language

KBS COMPUTER SERVICES
State Insurance Building,
14 Dale St. Liverpool L2 4TH.
Telephone. 051-236 9718

William Key

MIDDLE EAST OPPORTUNITIES

Our client in DUBAI operating in the oil industry has an IBM 370/135 DOS/VS installation with teleprocessing equipment using CICS. COBOL is the programming language.

New developments have created an immediate need for experienced and qualified people.

ANALYST/PROGRAMMERS — To design, program and implement Inventory control applications using the on-line facilities.

SENIOR PROGRAMMER — To write application programmes for existing and the new developments.

These positions offer a challenging prospect with
- ★ 2-year contract
- ★ Excellent tax free salary and allowances
- ★ Relocation expenses for all the family
- ★ Company accommodation and free utilities
- ★ 30 days' annual leave with paid air-fare

(Ref. CW 9518)

For further information and immediate interview please write to or telephone John Goodwell on 01-493 2947 or evenings and weekends Camberley (0276) 22505.

RECRUITMENT CONSULTANT

William Key are seeking an energetic individual to join their London office.
The work includes interviewing candidates, discussing job vacancies with clients and putting forward suitable applicants.
Previous knowledge of personnel recruitment would be an advantage but experience of the computer industry is the main requirement.
Expected annual earnings will be in the range of £6-£7000.

Please apply in writing enclosing brief career history to K. R. Jeffreys, Director, in London.

(Ref. CW 9519)

William Key & Partners Ltd., 4 Half Moon Street, London W1
Manchester, 504 Corn Exchange, Corporation Street, M4 300

AMERICA

First-rate opportunity for senior-level PROGRAMMERS, ANALYST-PROGRAMMERS and SYSTEMS ANALYSTS to gain the invaluable experience of a contract assignment in the United States, earning fees in the range $20k to $30k p.a.

OUR CLIENTS
A large manufacturing company located in Connecticut, currently using 370/158s under VM3, OS/VSI & OS/MFT, with an IMS database, and communications using CICS. They are undertaking major systems development in commercial, management information, personnel and production control areas.

THEY REQUIRE
Computer people at various levels to join project teams on assignments of from 6 mths. to 2 yrs. The main areas of experience they are seeking are as follows: 1. Large machines. 2. Large-scale system development. 3. Database. 4. Communications. 5. COBOL (not necessary for Analysts).

PROCEDURE
Representatives of our clients will be in London at our invitation on October 17th. If you are interested in a contract assignment in USA, contact us without delay so that we can arrange an interview for you. If successful, you will be offered a contract with us and all your travel, accommodation, insurances, etc., will be arranged for you. Throughout your stay in the States, our US representatives will provide local assistance and advice. After the successful conclusion of your US assignment, you will be offered lucrative contract work with us in the UK.

APPLY NOW
If you are a programmer, analyst-programmer or analyst with the kind of background indicated above, and are interested in a contract in America, phone 01-836 8411 WITHOUT DELAY for more information and to register your application.

Computer People Contracts
VLII House 68/69 St. Martins Lane
London WC2N 4JS
tel: 01-836 8411

BP

Software Opportunities

We operate a large Univac 1100 installation with remote batch, database and on-line systems. Expansion of our Computer Systems Department, which has centres in the City of London and at Harlow, Essex, has created new opportunities for Programmers and Analyst/Programmers to support and extend these systems. We require:

Analyst/Programmers

to work on support of DMS 1100 database systems software. Experience of an Assembler language is essential; some experience of database systems is desirable.

Programmers

to work on operating systems support. Univac experience preferred. Consideration will be given to candidates with experience of similar large systems or those with at least two years' experience in an Assembler language but limited operating systems background.

We offer a competitive salary; other fringe benefits include non-contributory pension scheme, subsidised restaurant and first class social/sports facilities. Please write, giving brief details of age, experience and qualifications, quoting reference PFCSS/FY, to: The Manager, Central Recruitment, The British Petroleum Company Limited, Britannic House, Moor Lane, London EC2Y 9BU.

MULTIBUS

Business has doubled in the last year. To enable us to double again in 1978 we need more:

Experienced Commercial Computer Sales Executives

in: LONDON (North of the Thames) THE HOME COUNTIES GREATER MANCHESTER MERSEYSIDE THE MIDLANDS THE NORTH EAST YORKSHIRE HUMBERSIDE SCOTLAND

We Offer: good basic salaries, generous commission, expenses, pension scheme, product training...

and: a comprehensive fully supported product range used for order processing, accounting, production planning, inventory management in commerce, industry and government.

We Require: experience, ability, dedication.

(PREFERENCE WILL BE GIVEN TO THOSE WITH TERRITORY EXPERIENCE)

ALLIED BUSINESS SYSTEMS LIMITED
MULTIBUS

Also available - Europe, Africa and North America.

IF YOU FIT THE BILL send your C.V. in confidence to this address for the attention of the Sales Manager.

London Sales Office:
1 Berkeley Street,
London W1
Telephone: 01-499 9020

Shift Leaders

ICL 1900 expanding to ICL 2900

South Beds. . . . . £4,500-£5,200

This is a job with a difference

Our Client thinks of it more in terms of shift management than a straight leadership. That means you have to know the work, make your own decisions and be the main link to a varied cross section of users.
You will have ICL 1900 experience using George II or III and will have accepted three-shift working as a way of life. On your shift you will organise the work of 3 to 4 people and probably won't push any buttons yourself. But you will take the responsibility and you should see yourself as the users' representative in the computer room.
Current equipment is ICL 1903T with 128K and a wide range of peripherals but expansion plans to install 2900 equipment mean really good career prospects for the right people.

The Company

Our client is Hunting Engineering Limited, a medium sized company employing 1,500 people. They have modern premises in rural Bedfordshire not far from the M1 motorway and easily accessible from population centres such as Luton and Bedford. Housing is attractive and plentiful in the area and the company will pay really generous relocation expenses where appropriate.
Please telephone or send your c.v. to:

Castle Computer Services Limited
271 High Street, Berkhamsted, Herts. HP4 1BW. Phone: (04427) 73161.

Computer Professionals

to £6,000

We require:

A.T.E. Applications Engineers–
to write Applications Programmes on a Nova Computer in Assembler. The work will also require special hardware device drivers to be written and support software modifications to be made;

Logic Design Applications Engineers–
to model digital logic circuits designed by our client using an established computer simulation technique and derive automatic testing information about the circuit;

Flight Simulation Engineers–
to work on all aspects of flight simulators in Sussex;

Programming Engineers–
to work on software mainly in the aviation field on topics such as: Assemblers, Assembler Programming of Micros and Minis, Simulation;

For a consultancy supplying high quality soft and hardware service to some of the major engineering and electronics industries in the U.K. Their success and growth stems from experienced, professional self-motivated and versatile staff. If you can fit in with such a team and are prepared to work hard with a minimum of supervision, travel to clients' sites, and justify a high salary by the calibre of your work then:-

PER PROFESSIONAL and EXECUTIVE RECRUITMENT

Telephone R. J. Downes, Brighton (0273) 23431

These vacancies are open to male or female candidates.

The next regional feature to appear within the Classified columns of Computer Weekly will be on October 27th when career opportunities in the North will be highlighted.
To advertise in this important feature contact:

OWEN KELLY
on 061-872 4211
or MARK WILLIAMS
on 01-261 8019

ANALYSTS & PROGRAMMERS

We've come a long way since then.

Wondrous though the business seemed in 1922, when the BBC first began radio broadcasts, our industry was of course, in its infancy. But progress has been rapid. Today, we have a dynamic, technological and creative corporation, evidence of which can be viewed daily, in colour, on that complex piece of equipment in your living room.

And as with many other contemporary operations, the computer has come to play a major role. With the BBC Computer Unit there are wide ranging applications in television, radio, engineering and finance, and now, we need more young analysts and programmers to help us develop new TP, on-line and data base systems for our ICL 2960.

You'd be working in Central or West London, but we'd like a chance to talk with you first, on one of the following evenings.

Find out just how far, at our next informal interview.

MONDAY, 10th OCTOBER, between 5 pm-8 pm at BBC Television Centre, Wood Lane, W12 (by White City tube station).
MONDAY, 17th OCTOBER, between 5 pm-8 pm at BBC, 252 Western Avenue, Acton, W3 (Gipsy Corner – nearest tube station North Acton).

We expect to meet young people of outstanding potential. And we can promise that you'll get a very clear picture of our career opportunities. (New salary increases are effective from 1st October 1977.) If you can't make either of these dates, please write to:– Appointments Department, BBC, Broadcasting House, London W1A 1AA quoting reference 77.G.497 .CW2 or phone 01-743 8000, ext. 4752.

BBC

Railway Automation

REAL-TIME PROGRAMMERS

We are engaged in the design, development and installation of sophisticated railway signalling equipment. In order to satisfy our planned growth, we are seeking to expand the microprocessor programming function within the Electronic Systems Department by the addition of real-time programmers at various levels.

They will be engaged on a wide range of activities, including the development of train describer software using mini and micro computer systems. To enable these activities to operate successfully, the Department is responsible for the Company's in-house computer facilities.

Applicants should preferably be qualified with a Degree/HNC in a relevant discipline and should have some experience of real-time programming within a systems engineering environment.

The posts will be based at Borehamwood, but will include opportunities for short periods of travel at home and abroad

Attractive starting salaries are offered dependent on age and experience, with good promotion prospects. Assistance with relocation expenses will be given where appropriate.

Applications including career details from either sex will be treated in strictest confidence and should be addressed to:

GEC

B. T. Bending, Chief Programmer
GEC GENERAL SIGNAL LIMITED
Elstree Way, Borehamwood, Herts.
Tel: 01-953 8211, ext. 3521

THE UNIVERSITY OF LANCASTER

SENIOR SYSTEMS PROGRAMMER

Applications are invited from either sex for the post of Senior Systems Programmer with the Computer Services Department. This is a senior post and the appointee will be expected to provide leadership in the implementation of operating systems in use by the department and to advise on future developments.

The present computer is an ICL 1906F running under GEORGE 3 and applicants must have proven experience in GEORGE 3, preferably in a university environment. An important part of the duties will be assistance at inter-university level in the development of a computer network linking five north-west universities. Experience in communications equipment and software would be advantageous.

Salary on the scale £5219-£[illegible].

Further particulars may be obtained (quoting reference L1/A) from the Establishment Officer, University House, Bailrigg, Lancaster LA1 4YW, to whom applications (six copies) naming three referees, should be sent not later than 28 October, 1977.

CHARING CROSS HOSPITAL
DEPARTMENT OF MEDICAL COMPUTING SCIENCE

COMPUTER OPERATIONS MANAGER/ESS

Salary Scale £5410-£5487

We have a vacancy for a Computer Operations Manager/ess to take charge of our Operations Section, running a 448K byte Xerox Sigma 6 computer on a two-shift basis, providing on-line services to a major hospital.

The person appointed to this key post will be responsible for the day-to-day running of the machine and its network of 30 terminals. The successful applicant will liaise with a wide variety of hospital staff as well as with computer and terminal maintenance contractors, to guarantee the high level of service necessary in a health care environment. The post also carries a number of administrative responsibilities concerned with the running of the department as a whole.

Applications are invited from experienced operations staff with good all-round technical knowledge, plus management and administrative ability.

Application form and further information from Linda Floyd, District Personnel Department, Charing Cross Hospital, Fulham Palace Road, London, W6 8RF. Telephone: 01-748 2040, ext. 2997. Closing date for return of applications 24th October 1977.

NORTHERN DIVISION

COMPUTER LIAISON SYSTEMS & CONTROLS ASSISTANT

Salary: £4,149-£4,479 (+ up to £520 p.a. supplement)

Based at Carlisle, you will be responsible for systems development, data control and all matters relating to the application of computer services on our remote terminal. You will also help provide accounting services for the division.

Applicants should have broad experience in commercial accounting systems. Relocation assistance will be available in appropriate cases.

Application forms from: The Divisional Administrative Officer, North West Water, Northern Division, P.O. Box 36, Holme Head, Carlisle, CA2 5LA. (Tel: Carlisle [illegible] ext. 279).

North West Water

Closing date for applications 21st October 1977.
The above post is open to men and women.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

SYSTEMS ENGR. £6K + Car

WEST LONDON

A rapidly expanding mini/communications manufacturer is looking for a Systems Engineer with strong Assembler programming ability. He/she must have a good knowledge of IBM communication systems and enjoy the customer contact and troubleshooting environment. Any additional experience of minis, analysis or a high level language would be a useful extra. The growth potential of this company ensures your career development.

Contact Peter Gorton

SALES Total Earnings £10K + Car

London/South West/Manchester/Midlands

Word processing is now firmly established and recognised as one of the major growth areas of the industry. This reputation has been assisted by the rapid development of equipment from automatic typewriter to disc based mini computers. The leading supplier in this market is now offering the opportunity to partake in this success story. Suitable applicants will have had extensive computer experience and a proven sales record gained in selling to the commercial sector of the market, or to the government.

Contact Faye Ogilvie

LECTURER C £5K

HERTS

Rewarding work in terms of personal involvement and remuneration are offered by our client, a small but thriving mini computer manufacturer. They require someone to lecture to both staff and customers, at their brand new premises, just 15 minutes by train from central London. They offer a wide variety of courses including Assembler level programming, operator training and computer appreciation at management level. Of equal importance as assets of the job are a background in programming and the right personality — outgoing, able to communicate ideas easily and hard working.

Contact Pam Quinlen

SENIOR ANAL to £7K

ESSEX

A top flight senior analyst is required by our client, part of a worldwide organisation, to lead a small team of people in a Production Control project. A strong programming background in RPG II would be a distinct advantage, plus 2-3 years' analysis experience in a Production Control environment. The top salary is only applicable to those who can show the required experience. However, candidates with a suitable analysis background would be considered.

Contact Rowland Middleton

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

ata Computer Recruitment

A division of ATA Selection and Management Services, recruitment consultants to Industry and Commerce since 1962.

SALES EXECUTIVES

VRC/DISK BASED SYSTEMS £10,000 to £15,000

An outstanding growth record over the last 18 months, coupled with concentrated advertising and promotional campaigns for their new disk based systems has created additional sales territories throughout the U.K.

As manufacturers with an enviable user base, opportunities for experienced, successful VRC/MINI sales executives are excellent. A significant number of our client's sales-force will earn £15k this year, and consequently they are to offer guarantees of up to £7000 P.a., with the knowledge that 1st year income should exceed £10,000. An above average tax free car allowance is paid (c£1200 p.a.), and the usual fringe benefits apply.

Please contact your nearest office for further information . . . a new territory can be formed in most areas for above average applicants.

SALESMEN/ANALYSTS Process the Word! — c£9,000

Do you have good experience of the Computer world?
If so why not redirect your expertise towards the Word Processing Market . . . a true growth area in the U.K.

Our client has a long and successful track record within W.P., and, as a stable, respected organisation are able to offer excellent training, allied to secure long term and lucrative employment.

Marketing a range of sophisticated high cost equipment to both commercial and industrial users the successful applicants (male/female) will be aged 25/40, and be resident in London or surrounding Home Counties. Ideally experience of computer sales is required but analysts or O & M personnel will be strongly considered. Remuneration is by way of basic salary, guaranteed earnings and commission. Quote in the 1st year is £6,500. However the above average will be capable of securing earnings of £9,000. A Company saloon car and expenses are supplied.

An immediate and confidential interview can be arranged by contacting your nearest branch.

London 01-637 0781 **Crawley 0293 514071**

LONDON (01) 637 0781, 230 Gt. Portland St., W1N 5HG
MANCHESTER (061) 832 5857, 86 Cross St., M2 4LA
BIRMINGHAM (021) 643 1994, Woolworth Building, 102 New St., B2 4HQ
BRISTOL (0272) 211035, Equity and Law Building, 36/38 Baldwin St., BS1 1NR
EDINBURGH (031) 226 5381, Anglia House, 24/26 Frederick St., EH2 2JR
CRAWLEY (0293) 514071, 36 The Broadway

Operators to Shift Leaders £2,000-£4,000 (incl.)

LONDON & HOME COUNTIES

We have many vacancies covering all types of machines and locations. Some firms will retrain from one manufacturer to another. Remember these positions are for shift working only. Hurry whilst stocks last.
CW40/1, Annette.

Junior Programmers £2,500-£3,750

LONDON, HOME COUNTIES

Only one year's experience? Then you are in great demand. We have a large selection of first-rate companies who need people like you.
CW40/4, Annette.

Time Sharing Programmers to £6,000

C. LONDON

If you have had time sharing experience involving the use of FORTRAN, BASIC or ASSEMBLER, then we have four nationally known companies who would offer you an exciting job in pre- or post-sales support. Some offer generous bonus schemes.
CW40/2, Michael.

Mini Computer Programmers to £6,950

U.K.

Your experience is required now. A very large number of vacancies are registered where a knowledge of Assembler or communications experience is essential (VRC programmers would also be considered). Opportunities exist in S.W., N.W. or W. London, Surrey, Hants. and Manchester in this exciting and rewarding field. There has also been registered some overseas posts to people with 5 or more years in mini computers.
CW40/8, Michael.

Successful Salesmen to £12K quota earnings

U.K.

We now have ten different firms for both hardware and systems only companies who are anxious to meet successful salesmen in this industry. They must have previous relevant small systems experience (some VRCs will be considered). All firms have bonus schemes and cars or car allowance. Most position in S.E. England, but 2 in Midlands.
CW40/3, Michael.

Contract Programmers to £190 p.w.

U.K.

Immediate requirements for IBM S73/3 RPG II & IBM COBOL under DOS or OS for C. London. PL/1, OS or CICS, PDP/11 or good IMS for various locations for 3 months plus. Also IBM vacancies in GERMANY, BELGIUM & HOLLAND. Ask for the Contracts Officer on 01-995 2239.
CW40/8, Michael.

Systems Consultants £6,000-£9,500

CENTRAL LONDON

Seven large well-established consultancies wish to recruit systems people with all-round experience on third generation equipment and the right personality to deal with clients who require a first rate service. Technical communications consultants are also required where in-depth implementation experience of IBM or ICL T/P message switching networks etc., are essential. Excellent fringe benefits and prospects.
CW40/7, Michael.

UCA

DATA EXPRESS HOUSE
PROSPECT PLACE
HEATHFIELD TERRACE
CHISWICK W4 3BR
Recruitment Consultants

01-995 3883 or 01-958 6138 evenings

NORTH WEST AREA SALES MANAGER

On quota earnings circa 9K + company car

Our Clients manufacture and market a highly competitive range of computer systems, fully supported by comprehensive software and engineering facilities. They are expanding the commercial division of their operation in the North West of England, and therefore seek candidates with proven sales experience of commercial disk-based systems, to develop the Client base in the North West.

Earnings between £9,000 - £12,000 should be achieved by ambitious candidates, combined with management responsibilities as the business base develops.

For further details:
CONTACT: DAVID WADE ON: 061-833 0676 — REF: 77/10/5

SPECIALIST COMPUTER RECRUITMENT LTD.
BIRMINGHAM 021-236 3781 FREEPOST
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR
MANCHESTER 061-833 0676 FREEPOST
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 3BD
LONDON 01-935 0671 FREEPOST 6
Freepost 6, 102, Blandford Street, London W1E 1JZ

Computing Services Association

SCR

CERN

European Organization for Nuclear Research
Organisation Européenne pour la Recherche Nucléaire

CERN, a European Research Laboratory situated near Geneva, has vacancies for

COMPUTER CONSOLE OPERATORS

in its central computer service. This is at present based upon CDC 7600, 6500, 6400 computers and an IBM 370/168 system.

The posts involve shift work including weekends and public holidays.

Candidates should have successfully completed their education to at least GCE "A" level or equivalent preferably including computer science or other scientific subjects. At least two years' experience of computer operation including some IBM experience is desirable. A knowledge of French would be useful.

For application forms, please write to:
Head of Personnel, CERN, 1211 Geneve 23, Switzerland
Quoting the reference OD-CO-77/1

Analysts and Programmers

£6,500/£5,000 Oil Industry

Dowell Schlumberger offers specialist technical services to the oil industry world-wide. Part of a major international group, it has a small but powerful computer centre in London. The configuration is an IBM 370/125 256K (which should shortly be up-graded) with local and remote VDU's. Applications are a range of management and financial information systems. Some are already highly sophisticated; others need to be devised and implemented to meet the demands of user departments throughout the world.

These are opportunities for competent Analysts and Programmers to move into a live environment offering considerable challenge and job satisfaction, as well as career progression. Analysts must have big-company TP experience under DOS/VS, and Programmers must be capable of working as expert members of a small team. Salaries will start at £6500 for Analysts and £5000 for Programmers. There are excellent continental standard benefits including an annual bonus.

We invite you firstly to telephone (01-629 1844 at any time) or write to ASL Recruitment Advertising, 17 Stratton Street, London, W1X 6DB, for further information and an application form, quoting ref. FY. 7650.

DOWELL Schlumberger

Programmer/Analyst

McEvoy Oilfield Equipment manufacture wellhead assemblies and associated equipment for application in oil and gas fields throughout the world. The Company is pleasantly situated in the Cotswolds, between Stroud and Nailsworth and currently employs 420 people.

We now require a Programmer/Analyst to join a small DP team and report directly to the Information Systems Manager.

Applications of the recently installed D.P. function are primarily involved within the manufacturing control area including data base creation, inventory control and material requirements planning.

Applicants should preferably be educated to HND/Degree level, and must have had at least 2 years' programming experience (preferably with ANS cobol and/or BAL) and a minimum of 1 year's analytical experience. Knowledge of BOMP/DBOMP or CFMS will be advantageous as would OS/JCL experience.

Fringe benefits include relocation expenses where appropriate.

Letters of application should be brief but include age, present position and salary. A comprehensive application form will subsequently provide full scope for details.

Applications should be marked "Confidential" and addressed to The Personnel Manager, McEvoy Oilfield Equipment Ltd., Woodchester, Stroud, Glos. GL5 5EY.

McEvoy OILFIELD EQUIPMENT LIMITED

COMPUTER OPERATOR

— NEAR OXFORD CIRCUS

Commencing Salary (including Shift Allowance) up to £3,850 p.a.

We are seeking additional staff with at least 18 months' experience of George 3 and/or OS/VS1 on systems similar to our own.

Our equipment includes an ICL 1904S using George 3 and MOP, an ICL 1904S using George 2 and Maximop, an IBM 370/145 under OS/VS1 (to be replaced by a 370/148 by the end of the year).

Valuable fringe benefits including FREE TRAVEL on London Transport services, excellent sports and social facilities and staff restaurant.

If you are interested and would like further information please telephone the Senior Operations Supervisor on (01) 637-9144, or write to: **Staff Appointments and Developments Officer (Ref. 666/G), London Transport, 55 Broadway, London SW1H 0BD.**

LONDON TRANSPORT

SITUATIONS WANTED

PROGRAMMER

(HND in Computer Studies with Distinction)

seeks suitable positions abroad. Thorough knowledge of COBOL, PLAN, FORTRAN, BASIC, FIND and FILETAB. Experience on 64K ICL 1902T operating under GEORGE II and MAXIMOP. Also have recognised commercial/management qualification and experience.

Write to Box 1897, Computer Weekly.

BIRKBECK COLLEGE

(University of London)

PROGRAMMER

The Department of Statistics has a vacancy for a graduate programmer with some statistical knowledge to support research and teaching, act as computing advisor and run the departmental computing facilities, using a 66/7600 system and a Wang 3300. Main languages FORTRAN and BASIC.

Initial salary in the range £2928 to £3385 plus London Allowance of £450.

Application forms and further details from the Deputy Secretary (CW), Birkbeck College, Malet Street, London, WC1E 7HX.

EXPERIENCED

CORAL OR FORTRAN PROGRAMMERS

required in West London and Hants. The work involves the design and implementation of scientific data analysis programs on mini computers. Applicants should be capable of working largely on their own initiative.

Reply with full details of programming experience and salary required to: 27 High Street, Saffron Walden, Essex CB10 1AT.

RPG II

ASSEMBLER HELPFUL

Travel, high pay. Interesting airline work.

Call Diana Gordon on 01-469 8119 or write:

SCAL
1-24 Cranbourne Street
London WC2H 7AA

Previous applicants may re-apply

CAPITAL APPTS

COMPUTER SERVICE ENGINEERS
[illegible] SALARIES TO £3,600

34, Percy St.

637 5551 day; 495 0068 [illegible]

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

ANALYST/PROGRAMMER RPG II

CITY — **DEVELOPMENT**

A major financial company with offices throughout the world is seeking an Analyst/Programmer to develop an unusual and interesting application using distributed minis, including IBM System 32s, linked to their main IBM installation in the City.

Joining a small team, the Analyst/Programmer will be able to partake in all issues of the systems development to successful implementation.

Excellent prospects of career progression are offered to candidates with sound RPG II programming experience. Knowledge of another language and on-line processing would be an advantage although training will be provided where necessary.

Excellent conditions of employment include Non-contributory Pension, BUPA, LVs and four weeks' holiday.

PROGRAMMING CONSULTANT 3-4 years' COBOL

W. LONDON — **UP TO £5500**

We are seeking a Programmer or Analyst/Programmer keen to accelerate his/her career by a move to Team Leading. You will be expected to play a major role in the development of new systems, being responsible for the programming and implementation of projects from specification to overall testing.

The person appointed will have in-depth knowledge of COBOL with an appreciation of commercial data processing. Previous supervisory experience is not essential although a commitment to maintaining high standards of coding and documentation are required.

The Company, a subsidiary of a major international group, offers a friendly environment with the exciting prospects of allowing your career and responsibility to grow with the Company. The offices are conveniently situated to both underground and main line stations.

SYSTEMS ANALAYST/PROJECT LEADER

S.W. LONDON — **c. £5750**

This is an ideal opening for an experienced Analyst to lead a project team of seven development staff installing a variety of applications on our client's new main-frame.

The Systems Analyst will hold responsibility for planning and scheduling complete systems installation and ensuring that team members adhere to standards and obtain the maximum use of modern techniques using the latest equipment available.

Candidates should have implemented at least one system from inception to completion and be capable of leading a project team.

This is a permanent appointment in a progressive and expanding organisation offering the successful candidate an excellent career path.

Benefits include Pension Scheme, Flextime, four weeks' holiday and LVs.

PROGRAMMERS

CENTRAL LONDON — **FROM £4000**

If you are able to offer from around twelve months' programming experience in either COBOL or an assembly level language you may well prove a suitable candidate for one of the current programming positions in our client's installation.

The department is currently undergoing a programme of expansion and can offer you the opportunity to become involved with a variety of interesting projects.

New members of the department will be attached to project teams where they will gain valuable experience working on both the developing of new systems and the maintenance and enhancement of existing systems.

The Company offer a very competitive salary range which is further enhanced by a comprehensive benefits package.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 5868

Our client, a well known name in the motor industry, have assigned us to recruit a number of people for their expanding data processing department.

ONE PROGRAMMER

SUSSEX — **Salary neg.**

It is expected that candidates have around two years' COBOL experience. Preferably this should have been gained on ICL 1900 equipment although this is not an essential requirement for the position.

The department is currently developing new on-line systems in the area of Accounting, Distribution and Stock Control.

THIS VACANCY IS AIMED AT PROGRAMMERS WISHING TO MAKE AN EARLY MOVE INTO SYSTEMS.

TWO SHIFT LEADERS

£4000 Neg. + overtime

Candidates for these positions should have the ability and experience to organise, develop and control shifts consisting of three people per shift.

Several years' operating experience on ICL 1900 equipment is required plus the ability to work in a demanding and rapidly expanding department.

THESE TWO POSITIONS BOTH CONTAIN EXCELLENT OPPORTUNITIES FOR REGULAR PAID OVERTIME.

TWO OPERATORS

Salary neg.

Two further operators are also required with a minimum 18 months to 2 years GEO II experience.

These positions would later lead to candidates with the ability and potential to become shift leaders.

REGULAR PAID OVERTIME WOULD BE AVAILABLE FOR BOTH THESE POSITIONS.

Our client has an excellent benefits package which includes:—

CAR PURCHASE SCHEME — FLEXIBLE WORKING HOURS (FOR THE PROGRAMMING VACANCY) — STAFF RESTAURANT — FOUR WEEKS' HOLIDAY.

RECRUITMENT RESOURCES LIMITED

For more information and to arrange an informal interview ring STUART WINFIELD on
01-439 8817/8 or write
2 GREAT MARLBOROUGH ST
LONDON W1V 1DE
after office hours 01-439 3933

Computing Services Association

DISTRIBUTED PROCESSING SYSTEMS

SUPPORT MANAGER — **to £7,000 + Benefits**

MIDLANDS and LONDON

The modish concept of decentralising computing power among small remote processors has been the essence of this clients market strategy for some years now. Their not inconsiderable reputation as one of the leading manufacturers of mini computers for the commercial market place is based upon the technical performance of a first-class product range, backed up by a thoroughly professional support team.

They are looking for two experienced and mature people to strengthen the support groups. These positions require experience of a support function within a manufacturer or systems house; the ideal candidates will have had some exposure in a team leading/project managing role. Experience of intelligent distributed systems or real time minis is desirable.

One position is BIRMINGHAM based and carries responsibility for pre- and post-sales support in the area.

The other position is LONDON based and will concentrate on pre/post sales support to Major Accounts and Government clients.

cw 40/1

hutchinson-scoggins recruitment

10 Dover Street London W1X 3PH Telephone 01-499 4501

ata Computer Recruitment

A division of ATA Selection and Management Services, recruitment consultants to Industry and Commerce since 1962.

PROGRAMMING BUSINESS SOLUTIONS

Initial Salary Scale £4,000 to £4,950 + £600 tax free expenses + mileage allowance

Our clients are market leaders in providing World Wide Information Networks for the Manufacturing, Financial and Commercial Sectors of Industry.
There is an immediate requirement for imaginative programmers based in Manchester and Birmingham who can demonstrate the following achievements in their careers to date.

a) A degree, preferably in a related subject

b) Active involvement in Business and Management Systems

c) Knowledge of FORTRAN and possibly additional languages

d) Experience of Interactive processing

e) Concepts of Databases

An assumption that we are seeking the elite would be correct but if you are searching for a position which can reward your initiative, business acumen, and mental agility in terms of stimulation, rapid career advancement and early salary reviews, then telephone your nearest office for further details in complete confidence.
Manchester 061-832 5857. Birmingham 021-643 1994.

PROGRAMMER/ TRAINEE ANALYST

WEST YORKSHIRE to £4,500

Our clients, the Foundries Division of a Major International Engineering Group, require an additional Programmer/Trainee Analyst with solid COBOL experience preferably gained in a commercial environment.

It is envisaged that the successful applicant will move on to Systems Design after approximately 6 months from joining the Company. He/She will then be involved in the recommendation, design and implementation of Systems at the various plants in Yorkshire.

The salary is negotiable to £4,500 and generous relocation assistance is available. The modern offices are easily accessible and the Company are also able to offer subsidised canteen facilities.

Contact Manchester office for further details. 061-832 5857.

LONDON (01) 637 0781, 230 Gt. Portland St., W1N 5HG · MANCHESTER (061) 832 5857, 86 Cross St., M2 4LA · BIRMINGHAM (021) 643 1994, Woolworth Building, 102 New St., B2 4HQ · BRISTOL (0272) 211035, Equity and Law Building, 36-38 Baldwin St., BS1 1NR · EDINBURGH (031) 226 5381, Anglia House, 24-26 Frederick St., EH2 2JR · CRAWLEY (0293) 514071, 30 The Broadway

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HERTS AND NORTH LONDON

PROGRAMMERS — £3,500/£5,800
ANALYSTS — £4,000/£6,000

Haymarket Computing act as a DP recruitment consultancy to 36 companies in the Herts/North London area and we are currently anxious to interview Programmers and Analysts on behalf of clients located in **Cockfosters, Borehamwood, Edmonton, Barnet, Watford and Enfield.**

Applicants will be invited to look through our client register which details the companies, positions, salaries, prospects, etc., so that we may jointly decide which vacancies best suit your requirements and experience

For more information ring:
HAYMARKET COMPUTING LTD.
Tel. Cuffley (Herts.) 4130
up to 7.00 p.m.

KENT COUNTY COUNCIL

Computer Operators

To £2775 + 17% Shift Allowance and £466 Salary Supplement

Two posts to join an operating shift running two ICL 1904S Computers. Shifts operate on a 3-shift rotating basis. 37 hours weekly. Experience in ICL George 3 and communication terminal links an advantage.

Assistance with relocation expenses in approved cases.

Application form, returnable by 21st October, from the Data Processing Manager, Computer Unit, West Malling Airfield, West Malling. Phone (0732) 845845, Ext. 288.

Advanced Software - Belgium

Due to increasing commitments for an established product, a limited number of opportunities have been created for Software Engineers in existing and new Project Teams.

These positions would provide expertise in:—
Real Time
Software Engineering
Microprocessors
Communications
Structured Programming

We are looking for experienced programmers, preferably with some existing expertise in the above fields who wish to extend their skills by contributing in a professional team.

Following a period of 'on the job' training in Belgium, there will be opportunities to remain for up to two years before being relocated back to STC.

An extensive range of benefits will be available for staff while working abroad and these include the expense of removal and relocation both to Belgium and back to the U.K.

For further information please write, giving brief career details to:
T. C. KERR, Switching New Products Division,
Standard Telephones & Cables Limited, Oakleigh Road South,
New Southgate, London N11 1HB
or 'phone 01-368-1234 Ext. 2385

Switching New Products Division
Standard Telephones and Cables Limited
A British Company of ITT

Urgently required in many areas:
CONTRACT COBOL PROGRAMMERS
for IBM, ICL and UNIVAC
Compex
COMPEX COMPUTER SERVICES LTD.
64 High Street
Newport Pagnell
Bucks. MK16 8EG
Tel: 0908 610419

CAPITAL APPTS.
34, Percy St. London, W.1.
FORTRAN
Experienced and Graduate
Trainee Programmers
urgently required for industrial and scientific development
£3000-£6000
ALL AREAS
Phone for free list of vacancies
637 5551 day; 445 0468 eve.

Programmers for New Zealand.

One of the largest users of EDP equipment in Australasia — a national network of front end mini processors with teleprocessing facilities and has now linked centres throughout New Zealand. Talented programmers are required for this major expansion. The Location—Wellington City

Mini-Computer Programmers

REQUIREMENTS:
- Proven experience in mini computer programming systems or assembler programming.
- Experience in programming minis used as front ends an advantage
- Communications network experience desirable

Systems Programmer (IBM 3600 Terminals)

REQUIREMENTS:
- Thorough knowledge of internals of IBM 3600 terminal system
- Experience using IBM equipment for on-line applications

REWARDS:
- Top salaries for New Zealand.
- Assistance with accommodation and air fares to Wellington.
- Reasonable excess air baggage allowance.

Please apply in strict confidence, in writing, with recent photograph; or telephone for application form.

Otteridge & Co.
Management Recruitment
199 Knightsbridge London SW7
Telephone: 01-589 1444 ext 344

THE UNIVERSITY OF LIVERPOOL
COMPUTER LABORATORY

COMPUTER OPERATORS

required to join a group of operators for ICL 1906S system running under George 4 operating system. Vacancies exist for both 3-shift and day shift work and will include both mainframe and remote job entry terminal operation. Salaries according to age and experience within the ranges:
Senior Operator: £2800-£3424
Operator: £2317-[illegible]
Trainee: £1712-£2317
Current shift allowance of 15% (under review) is paid for three-shift work.
Application forms may be obtained from: The Registrar, The University of Liverpool, P.O. Box 147, Liverpool L69 3BX. Quote Ref. RV/[illegible]

Edmund Howard's Client Album

PROGRAMMERS
RANGE UP TO £5,000
ON-LINE SYSTEMS DATABASE DEVELOPMENT
WEST LONDON

Further development within our client's data processing centre has created two openings for self-motivated Cobol programmers to assist with the development of new ON-LINE systems and DATABASE development. Although systems are not based on Univac hardware, experience gained on IBM or other leading hardware will be given serious consideration.

Our client is a well-known international organisation mainly concerned with the production and marketing of industrial and agricultural equipment. The two appointments advertised are a realistic opportunity to develop and broaden one's current achievements within a friendly and forward thinking company. For further details please quote CW 156.

ICL OPERATORS G2 and G2+ HOME COUNTIES (WEST)
£3,900 rising to £4,300 after one year

Here is an opportunity to join a leading international organisation whose products are brand leaders in the power tool market.

Currently they require additional operations personnel with at least 18 months' experience of G2 or G2+. Systems are based on an ICL 1903T running under G2+ with on-line facilities.

The D.P. Centre is spacious and well planned, with an excellent working atmosphere. The company operates a policy of internal promotion. Other benefits include four weeks' annual holiday, a subsidised restaurant and generous discount on company products. For further details please quote CW 157.

SYSTEMS ANALYST PROJECT LEADER
SURREY

We are recruiting on behalf of a large independent public organisation who operates as financial, professional and commercial agent for overseas government and public authorities.

ANALYST. Candidates should have sound experience in SYSTEMS ANALYSIS along with four years' programming encompassing on-line systems. A knowledge of Honeywell equipment would be advantageous.

PROJECT LEADER. Candidates' experience should be similar to that of the analyst appointment (paragraph above) coupled with management and leadership skills having a minimum of five years' overall data processing experience. Currently systems are Honeywell 1200 based progressing to a Honeywell level 66 next years. For further details please quote CW 158.

COMPUTER SCIENTISTS FOR BASIC SOFTWARE DEVELOPMENT
WEST OF LONDON
SALARY UP TO £6,500

Further expansion and development within our client's European Software Development Group has created opportunities for Computer Scientists to be involved in the design and implementation of compilers, T.P. monitors and data base systems. Candidates should possess systems software development experience which will probably have been gained with a Computer Manufacturer or software house.

These appointments offer unlimited career potential to individuals with the necessary background, experience and qualities. Senior candidates can expect to assume project leadership responsibility in the not too distant future. For further details please quote CW 159.

Edmund Howard & Partners
Computer Personnel Consultants
5 Brighton Road, Surbiton, Surrey. Telephone 01-399 9183.
38 Grafton Street, Dublin. Telephone 776 756.

DON COMPUTER SERVICES LIMITED

ICL PROGRAMMER

c. £3,300

A new position has been created for an EXPERIENCED PROGRAMMER, due to the increasing workload of the Company which handles the computing requirements for the George Bassett Group of Companies.

The opportunity to gain experience during the development of on-line systems should interest any individual desirous of enhancing their career prospects.

EXPERIENCE REQUIRED

A minimum of 2 years using ICL Cobol in a commercial environment working under GEORGE 2 operating systems.

Desirable experience would include COMMS MANAGER and real-time working.

Candidates should have a good educational standard and be capable of working to agreed target dates and require a minimum of supervision.

Conditions of employment include 25 days' annual holiday, flexible working hours, free life insurance and a contributory pension scheme.

Telephone: 0742 349391 (Personnel Department) to obtain application form or write to:

Mr. R. Gibson
Group Personnel Manager

Geo. Bassett & Co. Ltd.
P.O. Box 80 Livesey St. Sheffield S6 2AP. Tel: 349391

Baccarat Wetherall

We are an expanding international Company based in Liverpool's city centre and a vacancy has now arisen for an

ANALYST/PROGRAMMER

The successful applicant must have an in-depth knowledge of ICL system 10 and must have plenty of experience in programming and systems work. Career prospects are excellent if you show potential.
Salary is negotiable and will be discussed at interview.
Generous staff discounts and Canteen facilities are available.

Please ring: Mr. M. Ward
Data Processing Manager, 051-709 5555

Exciting career opportunities in Total Systems Development at Bracknell

ICL is about to establish another significant computer development. Our Product Development Group is setting up a combined hardware and software team to exploit and enhance the in-built marketing advantages of our System Ten machines. In fact we're bringing some of the best software and hardware brains together at Bracknell in what could prove a key chapter in ICL's computer product development. What's happening at Bracknell could represent a highly promising new career option for you.

Engineering Design Team Leaders
£4500–£6500

Will be spearheading the new approach to Total systems development. Working with a compact, efficient unit, your first assignment will be to build on the success of the System Ten. Team leadership experience is important, ideally in the Electronics industry. Familiarity with the Computer industry would be a considerable advantage.

Electronic Development Engineers
£3000–£5500

We are looking for experienced engineers with the extra qualification of enthusiasm. Proven skill and experience in the fields of logic and circuit design, microprocessors, communications, peripherals and systems packaging will be important recommendations. Ideally, you will have first-hand experience of working with a team involved in initial design work. Small business systems experience would be an advantage.

Microprogrammers
£3000–£5500

Will be involved in microprocessor-linked projects. An opportunity for programmers and engineers, particularly those with communications protocol experience, to move into the field of microprogramming.

Engineering Test Programmers
£3000–£5500

To write programs specifically designed to test hardware under development in support of the development activities. You could be a qualified engineer recently turned programmer. Basically we are looking for a sound engineering background allied to a real interest in software.

Here is a real opportunity to make an individual contribution to a significant area of a major computer company's development. Opportunities for your own career development are excellent too. Benefits include generous re-location expenses where appropriate to enable you to link up with one of the most exciting computer projects currently under way.

Write, quoting reference CW1529 with brief career details to Peter Mills, ICL, Lovelace Road, Bracknell, Berkshire RG12 4SN. Or telephone him on Bracknell (0344) 24842 for an application form.

International Computers ICL
think computers—think ICL

Programmer to £5,000
MID-BUCKS
Have your COBOL or ASSEMBLER programming experience (any byte machine)? If you do then this Finance organisation using the latest Univac equipment would like to see you. Terrific perks including a subsidised canteen, N.C.P.S. free life assurance, 4 weeks' holidays and a swimming pool on the premises.
CW40/8, Annette.

Analyst Programmer £5,000 to £6,000
W. MIDDLESEX
A go-ahead profitable Service Bureaux using on-line systems based around a Burroughs computer requires applicants with COBOL, plus extensive commercial and project management experience. Company benefits include Flexitime, canteen and sports facilities.
CW40/9, Annette.

Hardware & Test Engineers £4,000 to £6,000 +
HERTS & MIDDLESEX
Seven companies situated around W. & N.W. London require first-rate Engineers who have mini or mainframe hardware design experience. Six vacancies also exist for Test Engineers with 16 bit and 32 bit mini experience and relevant testing background. Perks in some cases include a car and expenses.
CW40/10, Michael.

Field Engineers to £5,000
LONDON AND HOME COUNTIES
We now have eight manufacturers of minis and mainframes requiring Field Service Engineers. Some firms offer excellent overtime payments and bonuses, etc.
CW40/11, Michael.

Systems Analyst c £6,000
W. LONDON
A major food group is engaged on extensive expansion plans involving T.S.O. and IMS on its large IBM installation. A user liaison analyst with some T/P experience is urgently required to simulate and design systems from a number of IBM 3790 terminals at subsidiary offices. Perks include 4 to 5 weeks holidays and free lunches.
CW40/12, Annette.

O & M Analyst £6,000
NORTHOLT
A medium sized consumer manufacturing firm soon to install an IBM computer needs good production control experience to help maintain this company as a leader in its field. Perks include 4 weeks' holiday and a generous pension scheme.
CW40/13, Annette.

Senior Systems Analyst c £6,500
NR STAINES
If you have ICL financial and commercial systems experience and like to be in charge, then this position could be for you. The firm is part of a large manufacturing group with a secure future.
CW40/14, Annette.

Assistant to D.P.M. to £7,500
W. LONDON
Applications are required from all round experienced analyst programmers to work for a Petro-Chemical company using a large CDC computer. Technical experience should include COBOL and FORTRAN but most important is the ability to deal with end users and advise and design new systems. N.C.P.S. Free Life Insurance, 3 weeks holidays.
CW40/15, Annette.

Systems Analyst to £6,950
VICTORIA
Have you designed and installed a major systems on a large computer (IBM preferred)? If you have then this famous Petro-Chemical company would be very interested in seeing you. New and improved Business Reporting applications await you. Company benefits include 4 weeks' holiday, Free Life Assurance, C.P.S. and L.V.s.
CW40/16, Annette.

UCA
DATA EXPRESS HOUSE
PROSPECT PLACE
HEATHFIELD TERRACE
CHISWICK W4 3BR
Recruitment Consultants
01-995 3883 or 01-958 6138 evenings

Systems Consultants *up to £8,000*

URWICK DYNAMICS have been computer consultants since 1956 and continue as leaders in the field.
We are rapidly expanding our work overseas particularly in Europe and in Central and South America.
To assist in this expansion we are seeking Systems Consultants to join us on either a long or short term basis.
Applicants, in the age range 25-29, should be graduates or have an accountancy qualification. They must have had at least three years experience of Systems Analysis and preferably have some knowledge of one or more of the following:

- Operational Research
- Minicomputers
- Database design
- Distributed processing
- Telecommunications

Successful candidates will be required to travel extensively abroad and ability to work in a major European language would be an advantage.
Salary and other benefits will depend on the choice of engagement which could be either a fixed long or short term contract.
This is an exciting opportunity to gain experience of advanced systems design on terms to suit an individual's career development aspirations.
For an application form, men and women are invited to write or telephone in confidence to Geoffrey Laycock at the address below (telephone 01-229 6742) quoting reference no. 578/CW

Urwick Dynamics Limited *9 Monmouth Road London W2 4UT*

PROG
S.E. ESSEX £4000+
Must have knowledge of COBOL & ASSEMBLER to assist in Management & Commercial projects. (Ref. 3947)

RPG II
ESSEX £4000
Small dept. require prog. to assist, extend and develop existing systems … on-line — 12-18 mths. exp. (Ref. 3949)

PLAN
S.E. ESSEX c £5k
2 yrs. commercial exp. with COBOL &/or PLAN — knowledge GII and drive an asset. (Ref. 3766)

COBOL
ESSEX £5000
1-2 yrs. exp. — good … pref. degree — relocation … — very attractive perks … essential. (Ref. 3868)

COBOL
ESSEX/HERTS to £5000
Minimum … exp. … large 370 installation … excellent promotional prospects … (Ref. 3771)

PROG
N.E. ESSEX c £4000
18 mths. exp. either ASSEMBLER or PL1 — or COBOL & ASSEMBLER for large 370 installation. (Ref. 3915)

SWEDEN
COBOL £4k-£7k
Must have H'well level 66 exp. — Also IBM 370 COBOL & BAL useful — 6 mths. contract. (Ref. 3938)

ANAL/PROG
SUFFOLK to £5000
Educ. to 'A' level — 3 yrs. COBOL — 2 yrs Analysis — Must be flexible and adaptable — mostly Systems work. (Ref. 3861)

0206-61261
Stone Executive
64-65 North Hill, Colchester, Essex.

ANALYST/PROGRAMMER
salary £5000-£6000 + COMPANY CAR

Join a dynamic Midlands company marketing DEC and other minicomputers on a turnkey basis.
We seek to recruit a person with considerable experience in commercial applications. Pre-Sales work is an important part of the job — some experience of this, or plenty of enthusiasm, will be needed.
We provide a company car, pension, insurance and bonus scheme.
(For the Job Specification, contact Andrew Reeves, Managing Director, 021-236 5234. (2 p.m.-7 p.m.)

PROGRAMMER
IBM SYSTEM 3

The Dunn & Wilson Group Ltd. has a vacancy for a Programmer to undertake a range of projects in the continuing development of the Company's operations.
The Group is a leading company in the library supply and bookbinding industry and is shortly to upgrade its computer installation to a System 3 model 15 for the introduction of on-line applications.
The successful applicant is likely to be in the 20/25 age bracket with at least two years programming experience.
Write with curriculum vitae to:
Mr. L. J. Wells, MBCS, The Dunn & Wilson Group Ltd., Earls Road, Grangemouth, Stirlingshire FK3 8XE

IBM
COBOL PROGRAMMERS—MIDLANDS—C £130-£140 p.w.
ASSEMBLER PROGRAMMERS—CICS—MIDLANDS—£130-£150 p.w.
ASSEMBLER CICS—ANALYST PROGRAMMERS—SURREY—TO £160 p.w.
COBOL PROGRAMMERS—SURREY—TO £150 p.w.
IMS APPLICATIONS—SOUTH EAST—TO £160 p.w.
OS COBOL—WEST COUNTRY—TO £150 p.w.
IMS ANALYSTS & PROGRAMMERS—NUMEROUS U.K.—TO £200 p.w.

ICL
COBOL PLAN PROGS—N. LONDON—TO £150 p.w.
COBOL PLAN PROGS—HAMPS—TO £170 p.w.
OPERATORS—NEW RANGE MIDLANDS—TO £110 p.w.

CONTRACT/FREELANCE REQUIREMENTS
GEORGE III—SOFTWARE DEVELOPMENT—LONDON—TO £200 p.w.
COBOL PROGS—MIDLANDS—TO £150 p.w.
VME6 EXPERIENCE—MIDLANDS & SOUTH—TO £150 p.w.
FORTRAN—MIDLANDS & SOUTH—TO £150 p.w.
PDP II—HAMPSHIRE COAST—TO £160 p.w.
HONEYWELL L66—LONDON—NUMEROUS—TO £150 p.w.
DEC ENGINEER (KUWAIT—2-YEAR CONTRACT TO GO UNACCOMPANIED)
HONEYWELL L66 COBOL IOS OR TOS—MIDLANDS—TO £150 p.w.
HONEYWELL LEVEL 66 IOS—NORTH WEST
HONEYWELL LEVEL 66 ANALYSTS IOS OR TOS—NORTH WEST
HONEYWELL LEVEL 66 OPERATIONS MANAGER—NORTH WEST
HONEYWELL STANDARDS DEVELOPMENT—NORTH WEST
APPLICATIONS SYSTEMS—SENIOR CONSULTANTS—NORTH WEST
PROJECT MANAGERS—NORTH WEST

EMS Consultants Ltd
EMS Consultants Ltd.
61-63 Lower Street
Newcastle-under-Lyme
Staffs ST5 2RS
Telephone 0782 623665 (10 lines)
Register NOW!

Programmers going places!

£3395-£4615, great prospects, relocation assistance to a superb part of England...

Go places with a computer unit amongst the foremost in local government right now and where enormous expansion is inevitable during the next few years. In a showpiece area of Kent — yet within easy reach both of London and the Channel ports.

It could be that 4th generation will soon be with us — we are already highly powered with two 1904s plus over 35 terminals. Peripherals switch into either machine, one of which performs mainly on-line work, the other mainly batch.

You will benefit from joining in many ways. With swift expansion certain, progress to Analyst Programmer could be well within your grasp. Tremendous work variety is already established. New training courses now being devised will offer a further career boost. And the lawned and wooded surroundings make working in this exciting environment even more enjoyable.

If you have COBOL and preferably PLAN/GEORGE III experience find out more. Phone Bob Griffiths at West Malling (0732) 845845 or write immediately for your application form to The Computer Manager, Kent County Council, Computer Unit, West Malling, Kent.

Experienced Programmer

For New ICL 2903 Installation

The Company, which is jointly owned by ICI and Hargreaves Group Limited, has operated a growing range of commercial programs over a 7 year period on a bureau basis. Early in 1978 its own ICL 2903 machine is to be introduced. The configuration includes 28K store and 2 EDS 30 disc units. Present programs are written in PLAN / COBOL. An experienced programmer is required to maintain and develop existing programs, and to extend computer use into new areas.

The main requirements are:—
1. At least 3 years' experience in an in-house environment — preferably 2903 or small 1900 users.
2. Experience in both PLAN and COBOL.
3. Ability to communicate clearly with non-technical managers is essential as the position will involve assisting the Administration Services Manager in development work and there will be considerable involvement with user departments.

A progressive salary will be offered in accordance with the Company's job grading scheme, together with good working conditions in our riverside offices in the centre of York. Four weeks' holiday, plus contributory pension scheme.

Apply in first instance to
G. Hart, Personnel Manager
HARGREAVES FERTILISERS LIMITED
Skeldergate Bridge, York YO1 1DR

If you want to grow talk to
Hargreaves

CITY OF LONDON POLYTECHNIC
SENIOR COMPUTER OPERATOR
£3,381 - £4,084 plus £287 shift allowance plus 8% pay supplement £182 minimum - £208 maximum.
The Computer Service at the City of London Polytechnic provides comprehensive computing facilities for ILEA Polytechnics, Schools and Colleges. Equipment installed currently consists of a large DEC System 10 computer with over 100 remote terminals, and two smaller Hewlett Packard Systems. Applications are invited for a vacant post of Senior Computer Operator, to join a small operating team working on a two shift basis. Preference will be given to applicants with operating experience on a DEC-10 and supervisory experience in a large multi-access installation.
For further details and an application form, please apply in writing to the Assistant Secretary, City of London Polytechnic, 117/119 Houndsditch, London EC3A 7BU, by 18th October, 1977.

PROGRAMMER WITH SYSTEMS POTENTIAL
c. £4250 per annum

Meyer Dumore International is a manufacturing company supplying machinery to the packaging industry.

The Company now needs a programmer to join its small Data Processing Department. He or she will work closely with the D.P.M. and be responsible for the running of the department in his absence.

Applicants should have at least 16 months' experience using RPG II in a commercial environment. A knowledge of IBM System 3 equipment would be preferred. The ability to work with minimum supervision and an open-minded attitude to one's work are essential.

Company Benefits include: four weeks' annual holiday, pension scheme, free life cover, subsidised canteen and parking facilities.

For further details and application form, please contact:
The Personnel Department
Meyer Dumore International Ltd.
Abbey Road, Park Royal
London NW10 7RD
(Telephone 01-965 4021).

HOWARD

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We are seeking Programmers in following major areas.—

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THE SALES BIT

The ideal salesman

TO many computer people outside of selling, a salesman is a peripheral employee who intersperses the indulgences of expense account living with the pleasures of articulate deception.

He is a ruthless exploiter of the uninformed, motivated only by sales commission. He is brash, insensitive and a born survivor. He is overpaid and underworked. He is a speculation, acceptable only within an expanding market.

On the other hand, the salesman may see himself as a pioneer at the "sharp end" of a company which must expand or die; a solitary traveller who must balance the insatiable demand for expansion with the frustrations of customer dissatisfaction and an inadequate product portfolio.

He, unlike other employees, is measured by his day to day performance — quotas, targets, salesplans, commission structures, and reporting systems.

He must keep a level head despite the financial and emotional boost of success and the cost and condemnation of failure — while the product, it seems, goes on for ever. At best he is yesterday's hero.

Both these descriptions are emotional and extreme, but it is difficult, if not impossible, to specify the qualities and aspirations of the successful salesman or even saleswoman.

The ideal computer salesman is unlikely to exist.

He should be industrious, sensitive, creative, objective, perceptive, attentive, determined, self-disciplined, self-motivated, self-organised, self-analytical, intelligent, articulate, fit, politically aware.

He should have commonsense, initiative, tenacity, courage, ambition, product knowledge, market knowledge.

While the accumulation of all these attributes would perhaps be a suitable qualification for becoming the New Messiah, they are qualities which are regularly called upon within the sales and marketing situation. For this reason even the very best salesmen fail from time to time.

However, there are some basic qualifications: without hard work, common sense, product knowledge and personal fitness the salesman is impotent; and without the salesman, so is the company.

This weekly column is for sales and marketing people. It will be predominantly devoted to discussions on random topics related to the basics of selling and marketing.

Hopefully it will provide a few hints and reminders, but also act as a forum for comment and a clearing house for sales and marketing problems of all kinds.

Much of what will be said has been said before, and what is new will be commonsense anyway. But like the man said, "I know you know it, but do you do it?"

The Trader